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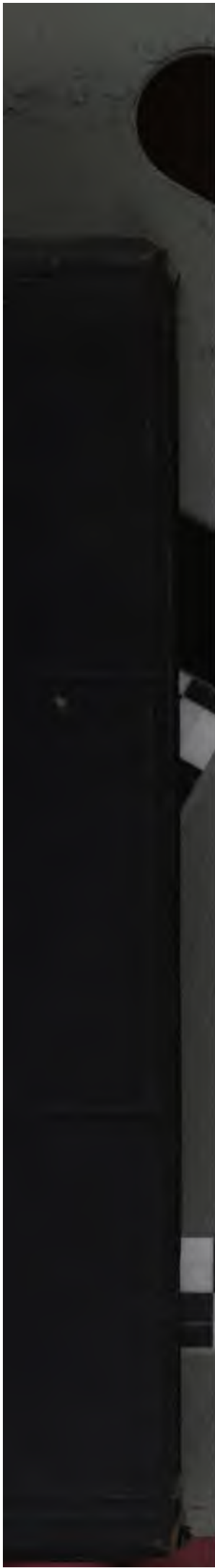
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THE
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PHARMACOPŒIA.



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PREFACE.

FOR many years the want of a practical, complete and reliable homœopathic pharmacopœia has been felt in this country; especially one that would include the many new remedies lately come into use.

Good pharmacopœias have been issued, that would only require to be brought up to date to make them authoritative. The most recent and best one—Dr. Willmar Schwabe's Polyglotta—failed to give descriptions of plants and minerals, and the mode of preparation of chemicals, necessitating works of reference, of which the latest and most correct issues are not always available, besides consuming valuable time of the busy practitioner. We have endeavored to remedy these defects in the present edition, and bespeak kindly indulgence for any shortcomings in this effort.

We take this opportunity to express our special thanks for valuable services rendered by Mr. F. O. Ernesty, Ph. G., of Chicago, in the compilation and preparation of the manuscript.

We are also under great obligations to Charles Mohr, M.D., former lecturer on homœopathic pharmaceutics at the Hahnemann Medical College of Philadelphia, for assistance in preparing the work for and seeing it through the press.

We gleaned from the recognized authorities in the sciences, and made use of all the homœopathic literature bearing on this subject. Again hoping for a favorable reception and friendly criticism, we present to the profession

The American Homœopathic Pharmacopœia.

F. E. BOERICKE, M.D.,

A. J. TAFEL.

May, 1882.

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INTRODUCTION.

The province of homœopathic pharmacy is to prepare the remedy as indicated by the prover, and in the form required by the practicing physician; and its object is to prepare and dispense *single* remedies in their utmost purity; to keep their virtue intact by freedom from contamination even of the slightest character.

In Homœopathic pharmacy the method of preparation does not so much depend upon changing scientific views and transient new processes, as upon that employed by the original prover, in order that uniformity in preparation may justify succeeding verifications and cures.

The greatest care and precision is required in homœopathic pharmacy, painful accuracy of detail, scrupulous exclusion of foreign matter and of any disturbing influences that might in the slightest degree affect the integrity of the medicine.

The homœopathic chemist should have a good, practical knowledge of botany, chemistry and the animal kingdom. He should be thoroughly acquainted with the drugs in the market, to determine the quality and detect the spurious or adulterated.

Only a belief in the truth of our system will guarantee the honest performance of his work, and inspire the physician with the confidence that in his warfare against disease he will not be hampered by carelessness or self-derived opinions on part of his pharmacists.

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PART I.

GENERAL

HOMŒOPATHIC PHARMACEUTICS.

IN the manufacture and preservation of Homœopathic medicines, care must be observed to avoid everything that can in the least affect their purity. Such influences as light, smoke, strong odors, etc., must be guarded against. Strong-smelling substances used for homœopathic purposes, which could contaminate the others, must, therefore, be kept separate. All homœopathic remedies, tinctures as well as potencies, should be protected from sunlight.

UTENSILS.

Bottles and Glasses.—For neutral substances as well as for remedies, only new, well-cleansed bottles and glasses should be used. They should be of *hyalite glass*. For remedies sensitive to light, vials covered with black varnish should be used.

Glass-stoppered Bottles should only be used for substances which corrode the cork—such as acids, iodine and bromine preparations, etc.

NOTE.—Yellow or amber-colored bottles were introduced some years ago, it being claimed that they afforded protection against the chemical rays of the light. However, such protection is afforded to but few chemicals, and as it is claimed by several writers that non-medicinal substances exposed for some time to yellow light acquire medicinal properties, it follows that amber-colored bottles are inadmissible as receptacles of homœopathic remedies. Besides this, it practically prevents a proper examination of the contents of the bottles.

Weights.—Unless otherwise specified the United States apothecaries weight is understood.

Corks.—The corks used must be of the best quality, and as free from pores as possible.

Measuring Glasses.—Measuring glasses, properly graduated, are used for measuring the liquid vehicles used in preparing potencies or attenuations, but they should never be used for measuring any medicinal substance.

Mortars.—For pulverizing very hard substances, a highly-polished iron mortar and pestle of the same material are employed; other metallic mortars must not be used. For softer substances porcelain mortars are suitable.

Triturating Mortars.—Triturating mortars and pestles must be made either of porcelain, the inside of the mortar and the face of the pestle being ground or unpolished, or of wedgewood-ware, or agate. Mortars made of metal are not to be used for triturating. Special mortars must be used for each separate remedy, with the name of the remedy marked on each mortar.

Sieves.—Only hair or silk sieves can be used; the former for the coarser powders in the preparation of tinctures, the latter for the finer, in making triturations. Sieves designed for sugar of milk must not be used for other purposes.

Spatulas and Spoons.—Spatulas and spoons must be made of horn, bone, or porcelain.

Funnels.—Only glass or porcelain funnels may be used; never metallic ones.

Chopping Board.—The chopping board must be made of sound, well-seasoned maple, free from knots.

Chopping Knife.—The chopping knife, used for cutting up plants, must be made of good steel, and always kept well polished.

Presses.—Presses used for plants must be well made, and so constructed that they can readily be taken apart, and thoroughly cleansed.

THE CLEANSING OF UTENSILS.

In making homœopathic preparations, the utmost cleanliness must be observed. Accordingly, utensils, even when used for the first time, must be thoroughly cleansed.

Glasses and bottles are to be washed several times with rain water, then rinsed with distilled water, and after draining, are to be dried at a high temperature.

Porcelain vessels must be scalded with boiling water, and dried at a high temperature.

The press is taken apart, and washed first with cold, then with hot water, and then dried thoroughly.

All utensils should be cleansed immediately after use.

Glasses and bottles which have been used for a particular tincture or potency, however well cleansed, must not be used for another preparation.

NEUTRAL SUBSTANCES OR VEHICLES.

AQUA DESTILLATA.

Distilled Water.—Composition H_2O . Molecular weight 18.

Preparation of Distilled Water.—Rain water collected a little while after the commencement of a storm, as that falling first contains particles of dust and various organic and inorganic matters which had been suspended or dissolved in the air, is subjected to distillation in an apparatus expressly designed for that purpose. A copper still and blocked tin condenser are generally used, but it is best to use a still that is gold or nickle plated throughout, as silica is dissolved by steam in an ordinary glass retort, and porcelain stills are objectionable for the same reason. The distilled water must be filled at once into glass-stoppered bottles, that it may not become contaminated by dust or spores floating in the air. Water prepared and preserved in this manner will remain pure for years.

Properties.—The taste of distilled water is insipid, owing to the absence of carbonic acid, or to the minute quantity of this gas absorbed by contact with air. At the temperature of $0^{\circ}C.$ ($32^{\circ}F.$) water freezes, forming transparent crystals of ice; if entirely undisturbed, it may be cooled to several degrees below this point without freezing, and if now slightly agitated will at once congeal, the temperature rising to the freezing point in consequence of the liberation of latent heat. The boiling point of water is $100^{\circ}C.$ ($212^{\circ}F.$). The density of distilled water at $15^{\circ}C.$ ($59^{\circ}F.$), or at $15.5^{\circ}C.$ ($60^{\circ}F.$), is by general consent regarded as the unit by which the density of liquid and solid bodies is measured. The specific gravity of water decreases with the rise of temperature, and increases gradually as the temperature is lowered until $+4^{\circ}C.$ ($39^{\circ}F.$) is reached, when it has its maximum density, becomes lighter again towards the freezing point, and expands very considerably when passing into the solid state, ice having the specific gravity 0.916.

Tests of Purity.—Distilled water is colorless, inodorous, and tasteless, leaves no residue on being evaporated, and is not affected by sulphuretted hydrogen, oxalate of ammonium, nitrate of silver, chloride of barium, or lime-water.

ALCOHOL.

Spirit of Wine.—Alcohol entirely free from fusil oil, is to be subjected to redistillation in an apparatus especially adapted for the purpose. The product should be reduced to 87 per cent. (Tralles) or a specific gravity of 0.83, by adding distilled water. This is the standard official strength of so-called homœopathic alcohol.

NOTE.—When a stronger alcohol is employed to prepare a tincture, the strength (according to Tralles) is expressed.

Dilute Alcohol.—Consists of seven parts alcohol, specific gravity 0.83, and three parts distilled water, specific gravity 0.89.

Properties.—Alcohol is colorless, transparent, very mobile, volatile.

Mixes in all proportions with distilled water and remains clear. Odor and taste purely alcoholic.

Tests.—Diluted with distilled water in equal proportions, alcohol should yield no foreign odor. Alcohol treated with a few drops of solution of nitrate of silver, and exposed to bright light remains unchanged if pure.

Add to the alcohol slowly its own weight of pure concentrated sulphuric acid. If the alcohol is pure, it remains colorless; if fusil oil is present, a reddish color will be developed.

SACCHARUM LACTIS.

Sugar of Milk.—The best commercial article in crystals should be refined by solution in distilled water and careful recrystallization. It should then be well dried, pulverized, and sifted in an apparatus used for this purpose only.

Another mode of refining is as follows:

The best commercial sugar of milk is dissolved by heat in the least possible quantity of distilled water, then filtered, and by the addition of an equal bulk of pure alcohol a confused crystalline precipitate is obtained. This is collected, freed from any mother-liquor still contained in it, by washing with alcohol, and then it is rapidly and carefully dried.

The sugar should be kept dry.

Character and Tests.—Sugar of milk is scentless, gritty to the touch, faintly sweet. It should be perfectly soluble in boiling water. A solution of iodine, if the article is adulterated with starch, will give the characteristic blue color.

GLOBULES OR PELLETS.

Globules are prepared from pure cane sugar. They must be white, of even size, not too hard, and entirely soluble in distilled water. When freshly made they are generally softer, but become harder by age. Addition of flour, glucose, glycerine, or starch, to make them soft, is an adulteration. They are assorted according to size and designated by numbers from 8 to 80.



Measure of Globules.—The number given to any size of globules is determined by laying ten of equal size in a line; the number of millimetres they measure is the number given to that particular size.

THE PROCURING OF MEDICINAL SUBSTANCES.

Fresh Plants.—As to the time when the fresh plant is to be gathered, the directions to be followed, with few exceptions, are given under the remedy. If these are wanting, it is to be assumed that they have been collected by the prover at that season in which their medicinal virtue is greatest; narcotic plants while in bloom, others shortly before, or when coming into bloom.

Collect only healthy, strongly developed, faultless plants, free from dust and caterpillar's nests, and which grow wild in a locality most favorable to their development. Cultivated flowers are employed only in cases where the prover has expressly prescribed their use. Plants are gathered when the weather has previously been sunny and dry, and the morning-dew has dried upon them. The collected specimens must not be packed too closely in carrying, and should be quickly subjected to manipulation, so that they may yield their full strength unchanged.

Fresh Portions of Plants.—The same principles apply to the collection of fresh portions of plants.

FRUITS and SEEDS ought to be collected in their fully ripe condition (unless the unripe are prescribed).

WOODS are collected before the beginning of spring, before the buds are developed.

HERBS should be cut above the root-leaves.

BARKS are collected from resinous trees and shrubs at the time of, or before the development of the leaves; from the non-resinous, in autumn.

ROOTS are dug, unless specially directed otherwise, as follows: Of annual plants, before the ripening of the seed; of biennial plants, in the spring of the second year; of perennial plants, in autumn.

TWIGS are used of the growth of the present year.

Drugs, Metals, Minerals, Chemicals, Etc.—The genuineness and purity of drugs, metals, minerals, chemicals, etc., are tested according to the stated rules, before they are employed for any homœopathic purposes.

PRELIMINARY MANIPULATIONS.

Fresh Plants and Parts of Plants—The fresh plant, or part of it, is at first once more examined as to its undoubted identity, then carefully freed from any impurities that might have accidentally escaped notice in gathering it. Only those parts are taken for use which are specified under the respective remedy. The operation must be carried on as quickly and uninterruptedly as possible in the following manner: The plant should be cut up with a well polished steel knife, free from rust, on a well cleansed chopping board; then divided as finely as possible with an equally well cleansed chopping knife. The finely divided mass is then to be treated as is more minutely described under the different heads of Class I, II, III, according to which the tincture is to be prepared. Fresh fruits and seeds, if they can be cut up, are treated as above; if not, they are simply mashed in a mortar.

Dried Plants and their Parts.—For the preparation of tinctures, they are pulverized coarsely; for the preparation of triturations, as finely as possible.

Metals, Minerals and Chemical Preparations.—The rule for this class is to reduce the crude substance to a state so finely divided, that, if it is to be triturated, it can be done uniformly. This we accomplish with a part of these substances by pounding, but with most metals by precipitation.

NOTE.—Hahnemann employed metallic foil or filings, or comminuted the metals on a whet-stone. Later microscopic examinations have shown, however, that this method of subdividing is very imperfect, and renders the purity of the metal very doubtful, particles of the iron or whet-stone becoming mingled with it. The uniform distribution of the crude substance, on the other hand, has been shown to have been accomplished only in triturations prepared from precipitates. For this reason we employ precipitates, since we consider this departure from Hahnemann's rules to be in no wise subversive of Homœopathy. Moreover, the triturations prepared from precipitates have been used for re-provings, and it is only by the use of precipitates that we obtain preparations of constant uniformity.

PREPARATION OF POTENCIES OR ATTENUATIONS.

Two scales are employed in potentizing, viz., the *centesimal* and the *decimal* scale.

The Centesimal Scale.—This scale was introduced by Hahnemann, and is still retained in making the higher potencies, while the lower potencies are now more generally made on the decimal scale. The centesimal scale is based on the principle that the first potency must contain the $\frac{1}{100}$ part of the drug-power, and each following potency the $\frac{1}{100}$ part of the preceding one. However, as tinctures and solutions are prepared by different rules, the drug power varies, and hence the quantity of the mother-tincture or solution and of the neutral vehicle must be so proportioned that the first potency represents the $\frac{1}{100}$ part of the drug-power. In preparing the second, and following potencies, to one minim or part by weight of the preceding potency, ninety-nine minims or parts by weight of the neutral vehicle are added. The respective "classes" which prescribe the relative proportions for the different potencies give the necessary information.

The Decimal Scale.—During Hahnemann's lifetime another method, the decimal scale, introduced by Dr. Constantine Hering, found many adherents among homœopathic physicians. In preparing remedies according to this scale, it is the rule that the first potency should contain the $\frac{1}{10}$ of the drug-power, while the following potencies are prepared with one minim or part by weight of the preceding potency to nine minims or parts by weight of the neutral vehicle. (Compare the classes.)

ATTENUATIONS.

Potentiation of Liquid Substances.—Potentiation must be carried on in an apartment free from all odors, dust and direct sunlight

The vials used for this purpose must be round, and capable of holding half as much more as is to be potentized therein. The name of the remedy with the number of the potency is marked both on the cork and on the vial, using the simple numeral for the potencies on the centesimal scale, and affixing an x to the numeral for potencies on the decimal scale.

POTENTIATION ON THE CENTESIMAL SCALE.—Into the duly marked vial intended for the first potency, the proper proportion of mother-tincture or solution is poured and the vehicle added—as mentioned under the class according to which the tincture has been prepared (see pp. 11–18),—then cork the vial carefully, and shake it by ten powerful downward strokes of the arm.

The second potency is made by adding to one minim of the first potency ninety-nine minims of the vehicle, the vial being shaken again as directed above. All subsequent potencies are made in like manner, *i. e.*, by adding to one part of the preceding potency ninety-nine minims of the vehicle, and giving it ten succussive strokes.

In this manner potencies may be carried up to the one thousandth or higher; attenuations above the thirtieth are termed *High Potencies*.

POTENTIATION ON THE DECIMAL SCALE.—Into the duly marked vial intended for the first decimal potency the proper proportion of mother-tincture or solution is poured and the vehicle added—as mentioned under the class according to which the tincture or solution has been prepared (see page 11–18)—then it is well corked, and the contents shaken with ten vigorous downward strokes of the arm. All following potencies are made in the same manner, except that each time one minim or part of the preceding potency and nine minims or parts of the vehicle are measured into the vial, and then shaken as directed above.

NOTE.—We are explicit in directing the proper proportion of the substance being first put into the vial, and the vehicle afterwards, because this is a rule all careful pharmacists should follow, to prevent the possibility of mistakes.

TRITURATIONS.

Potentiation of Dry Substances.—Dry substances, *i. e.* those whose medicinal power, according to homœopathic principles, must first be developed by trituration with sugar of milk, ought to be manipulated in a warm and dry atmosphere. Before beginning the work we must satisfy ourselves that the apparatus to be used is perfectly clean. Mortars should be washed first with cold water, then with hot water, and carefully wiped dry, and lastly, a small quantity of alcohol is to be burned in the mortar. This must be done for every subsequent trituration.

TRITURATIONS ON THE CENTESIMAL SCALE.—Hahnemann so lucidly gives the technical directions to be observed in tritulating, in his *Chronic Diseases*, Vol. 1, p. 183, that we give here a careful translation: “First add one grain of the substance to about one-third of ninety-nine grains of sugar of milk in a porcelain mortar, unglazed or ground to an unpolished surface by rubbing with wet sand; mix the medicine and the

sugar of milk together for a moment with a porcelain spatula, then after triturating the mixture vigorously for six minutes, scrape the trituration together for four minutes from the bottom of the mortar and from the face of the (also unglazed) porcelain pestle, in order that the trituration may be uniformly mixed, and again triturate the scraped-up mass (without further addition of sugar of milk) a second time for six minutes with the same force. To this powder, again scraped up for four minutes, in which the first third of ninety-nine grains has been used, we add now the second third, mixing both together with a spatula for a moment, and again triturating for six minutes with the same force, and then again scraping up the trituration for four minutes, triturate vigorously six minutes a second time, and having scraped this mass together for four minutes, incorporate the third portion of sugar of milk by stirring with the spatula so that the whole mixture after six minutes vigorous trituration and four minutes scraping together may for the last time be triturated six minutes and then scraped together carefully." This is the first (1) trituration. To prepare the second (2) trituration, one grain of the trituration is added to the one-third part of ninety-nine grains of sugar of milk mixed in a mortar with the spatula, and so treated that each third is twice well triturated for six minutes, and scraped together for four minutes, and then put into a well-stoppered bottle. In the same way one grain of the second (2) trituration is treated to prepare the third (3). The trituration must be energetic, but not so much so that the sugar of milk shall cleave so strongly to the bottom of the mortar that it cannot in four minutes be scraped together. To make any higher trituration, one grain of the preceding trituration to that desired is triturated with ninety-nine grains of sugar of milk as directed above.

CONVERSION OF THE THIRD CENTESIMAL (3) TRITURATION INTO LIQUID POTENCIES.—The substances triturated according to the centesimal scale to the third (3), are brought by this continuous process to such a degree of attenuation that they combine with a liquid vehicle, such as alcohol or water, and can thus be carried to a still higher degree of subdivision. This method of conversion, Hahnemann describes as follows:

"In order to convert the potent trituration into the liquid state, and still further develop its power, we avail ourselves of the experience, hitherto unknown to chemistry, that all medicinal substances triturated to the third (3), are soluble in water and alcohol. Fifty minims of distilled water are added with the measuring glass to one grain of the third (3) trituration, and this by agitation is readily dissolved; then fifty minims of alcohol are added, and the stoppered vial, only two-thirds filled with the mixture, is shaken ten times; this is the fourth (4) potency. Of this, one minim is added to ninety-nine minims of alcohol, and the well corked vial shaken ten times; this is the fifth (5) potency. The following potencies are each prepared with one minim of the preceding potency to ninety-nine minims of alcohol, and each shaken ten times."

TRITURATIONS ON THE DECIMAL SCALE.—For the triturations to be prepared according to the decimal scale, we follow the same method in

trituration as is given under the centesimal scale, except that first ten parts by weight of the crude substance are triturated with thirty grains of sugar of milk for twice six minutes, and each time scraped together for four minutes. We then add thirty grains more of sugar of milk, triturate again twice six minutes and each time scrape together for four minutes, finally adding yet thirty grains more of sugar of milk, and triturating the mixture in the same manner. This is the first decimal (1x) trituration. Ten parts by weight of this preparation, triturated with three times thirty parts by weight of sugar of milk in precisely the same manner, gives the second decimal (2x) trituration. Of this, ten parts by weight with three times thirty parts by weight of sugar of milk gives the third decimal (3x), and in this way, the trituration each time of ten parts by weight of the preceding trituration, with ninety parts by weight of sugar of milk is continued for any higher trituration desired on the decimal scale.

CONVERSION OF THE SIXTH DECIMAL (6x) TRITURATION INTO LIQUID POTENCIES.—We dissolve one grain of the 6x trituration in fifty minims of distilled water in a vial, adding thereto fifty minims of alcohol, and shaking the vial ten times; this is the 8x potency. (The 7x, according to the rule governing this scale cannot be prepared in the proportion of one to nine.) One drop of the 8x potency with nine minims of dilute alcohol, shaken ten times, gives the 9x potency. One minim of the 9x potency with nine minims of alcohol, and shaken ten times, gives the 10x potency. All following potencies are each prepared with one minim of the preceding potency to nine minims of alcohol, and each shaken ten times.

NOTE.—Hahnemann directs *drops* of drug and vehicle to be used, but as there is no uniformity in the measure of a drop of the different liquids, we have adopted the more exact measure of *minims*.

MEDICATED GLOBULES.

Medication of Globules.—Moisten the globules with the requisite potency, in a bottle two-thirds filled, cork the bottle, and shake it so that all the globules become uniformly moistened. Then turn the bottle, standing it on the cork, and let it remain from nine to ten hours. Then loosen the cork a little, and let the liquid that may be about the neck of the bottle drain out. In a few days the pellets will be entirely dry, and ready for dispensing. It is not proper to dispense medicated globules until they have become perfectly dry.

Potencies prepared with dilute alcohol cannot be used for medicating globules, as the globules would become disintegrated by the solvent power of the water it contains.

Medicated pellets, like all other homœopathic medicines, require to be kept well-corked, and protected from heat and sunlight. Carefully kept they retain their virtue many years.

NOTE.—Hahnemann gives another method in his *Chronic Diseases*, Vol. 1, page 187: "The globules are poured into a clean porcelain bowl, rather deep than broad, and enough of the required potency dropped upon them to moisten completely every globule in the space of one minute. The contents of the bowl are

then emptied on a piece of clean, dry filtering paper, so that any excess of liquid may be absorbed, and the globules spread out that they may soon dry. The dry globules are then poured into a vial duly marked with the name and potency, and securely corked."

PROPORTIONS OF MEASURE AND WEIGHT IN THE PREPARATION OF TINCTURES, SOLUTIONS, POTENCIES AND TRITURATIONS.

The proportion of measure and weight, employed in the preparation of tinctures, solutions, potencies and triturations, for the sake of more convenient reference, are arranged in nine classes, to which attention is called under each medicine.

CLASS I.

TINCTURES.

Tinctures prepared with equal parts by weight of juice and alcohol. The fundamental rule for this class is contained in Hahnemann's *Mat. Med. Pura*, under Belladonna.

The freshly-gathered plant, or part thereof, chopped and pounded to a pulp, is pressed out in a piece of new linen. The expressed juice is then, by brisk agitation, mingled with an equal part by weight of alcohol. This mixture is allowed to stand eight days in a well-stoppered bottle, in a dark, cool place, and then filtered.

Amount of drug power of tincture, $\frac{1}{2}$.

POTENTIATION.

a. Centesimal Scale.

2 minims of tincture and 98 minims of dilute alcohol give the 1st potency.

1 minim of the 1st potency and 99 minims of alcohol give the 2d potency.

All the following potencies are prepared with one minim of the preceding potency to ninety-nine minims of alcohol.

b. Decimal Scale.

2 minims of tincture and 8 minims of dilute alcohol give the 1x potency.

1 minim of the 1x potency and 9 minims of dilute alcohol give the 2x potency.

1 minim of the 2x potency and 9 minims of alcohol give the 3x potency.

All following potencies are prepared with one minim of the preceding potency to nine minims of alcohol.

CLASS II.

TINCTURES.

Tinctures expressed by the aid of two parts of alcohol added to three parts of plant, or part thereof.

The fundamental rule for this class is contained in Hahnemann's *Mat. Med. Pura*, under Thuya.

The finely-chopped, fresh plant, or part thereof, is weighed. To every three parts, two parts by weight of alcohol are taken. Then the chopped plant is moistened with as much alcohol as is necessary to bring the mass to a thick pulp and is well stirred. Adding the rest of the alcohol, the whole is mixed together and strained through a piece of new linen. The tincture thus obtained is allowed to stand eight days in a well-stoppered bottle, in a dark, cool place, and then filtered.

Amount of drug power of tincture, $\frac{1}{2}$.

POTENTIATION.

a. Centesimal Scale.

2 minims of tincture and 98 minims of dilute alcohol give the 1st potency.

1 minim of the 1st potency and 99 minims of alcohol give the 2d potency.

All following potencies are prepared with one minim of the preceding potency to ninety-nine minims of alcohol.

b. Decimal Scale.

2 minims of tincture and 8 minims of dilute alcohol give the 1x potency.

1 minim of the 1x potency and 9 minims of dilute alcohol give the 2x potency.

1 minim of the 2x potency and 9 minims of dilute alcohol give the 3x potency.

All following potencies are prepared with one minim of the preceding potency to nine minims of alcohol.

CLASS III.

TINCTURES.

Tinctures prepared with two parts by weight of alcohol to one part of plant, or part thereof.

The fundamental rule for this class is contained in Hahnemann's *Mat. Med. Pura*, under Scilla.

The fresh plant, or part thereof, is pounded to a fine pulp and weighed. Then two parts by weight of alcohol are taken, and after thoroughly mixing the pulp with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole, and having filled it into a well-stoppered bottle, it is allowed to stand eight days, in a dark, cool

place. The tincture is then separated by decanting, straining and filtering.

Amount of drug power of tincture, $\frac{1}{2}$.

POTENTIATION.

a. Centesimal Scale.

6 minims of tincture and 94 minims of dilute alcohol give the 1st potency.

1 minim of the 1st potency and 99 minims of alcohol give the 2d potency.

All following potencies are prepared with one minim of the preceding potency to ninety-nine minims of alcohol.

b. Decimal Scale.

6 minims of tincture and 4 minims of dilute alcohol give the 1x potency.

1 minim of the 1x potency and 9 minims of dilute alcohol give the 2x potency.

1 minim of the 2x potency and 9 minims of alcohol give the 3x potency.

All following potencies are prepared with one minim of the preceding potency to nine minims of alcohol.

CLASS IV.

TINCTURES.

Tincture prepared with five parts by weight of alcohol.

The fundamental rule for this class is contained in Hahnemann's *Mat. Med. Pura*, under *Spigelia* and *Staphisagria*.

Weigh the finely divided substance (dried vegetables and animals are pulverized, fresh animals are pounded), and pour over it five parts by weight of alcohol, then let it remain eight days (provided that for the particular medicine a longer maceration is not required), at ordinary temperature in a dark place, shaking it twice a day; then pour off, strain and filter.

Amount of drug power of tincture, $\frac{1}{16}$.

POTENTIATION.

a. Centesimal Scale.

10 minims of tincture and 90 minims of alcohol give the 1st potency.

1 minim of the 1st potency and 90 minims of alcohol give the 2d potency.

All following potencies are prepared with one minim of the preceding potency to ninety-nine minims of alcohol.

b. Decimal Scale.

As the tincture contains $\frac{1}{16}$ drug power, it corresponds to the 1x potency.

1 minim of tincture and 9 minims of alcohol give the 2x potency.
All following potencies are prepared with one minim of the preceding potency to nine minims of alcohol.

CLASS V—*a*.

AQUEOUS SOLUTIONS.

One part by weight of the medicinal substance is dissolved in nine parts by weight of distilled water.

Amount of drug power of solution, $\frac{1}{10}$.

POTENTIATION.

a. Centesimal Scale.

10 minims of the solution and 90 minims of distilled water give the 1st potency.

1 minim of the 1st potency and 99 minims of alcohol give the 2d potency.

All following potencies are prepared with one minim of the preceding potency to ninety-nine minims of alcohol.

b. Decimal Scale.

As the solution contains $\frac{1}{10}$ drug power, it corresponds to the 1x potency.

1 minim of the solution and 9 minims of distilled water give the 2x potency.

1 minim of the 2x potency and 9 minims of dilute alcohol give the 3x potency.

1 minim of the 3x potency and 9 minims of alcohol give the 4x potency.

All following potencies are prepared with one minim of the preceding potency to nine minims of alcohol.

CLASS V—*β*.

AQUEOUS SOLUTIONS.

One part by weight of the medicinal substance is dissolved in ninety-nine parts by weight of distilled water.

Amount of drug power of solution, $\frac{1}{100}$.

POTENTIATION.

a. Centesimal Scale.

As the solution contains $\frac{1}{100}$ drug power, it corresponds to the 1st potency.

1 minim of the solution and 99 minims of alcohol give the 2d potency.

All following potencies are prepared with one minim of the preceding potency to *ninety-nine minims* of alcohol.

b. Decimal Scale.

As the solution contains $\frac{1}{100}$ drug power, it corresponds to the 2x potency.

1 minim of the solution and 9 minims of dilute alcohol give the 3x potency.

1 minim of the 3x potency and 9 minims of alcohol give the 4x potency.

All following potencies are prepared with one minim of the preceding potency to nine minims of alcohol.

CLASS VI—*a*.

ALCOHOLIC SOLUTIONS.

Two parts by weight of substance to nine parts by weight of alcohol. The fundamental rule for this class is contained in Hahnemann's *Mat. Med. Pura*, under Guaiacum.

Two parts by weight of the medicinal substance are dissolved in nine parts by weight of alcohol.

Amount of drug power of solution, $\frac{1}{5}$.

POTENTIATION.

a. Centesimal Scale.

10 minims of the solution and 90 minims of alcohol give the 1st potency.

1 minim of the 1st potency and 99 minims of alcohol give the 2d potency.

All following potencies are prepared with one minim of the preceding potency to ninety-nine minims of alcohol.

b. Decimal Scale.

As the solution contains $\frac{1}{10}$ drug power, it corresponds to the 1x potency.

1 minim of the solution and 9 minims of alcohol give the 2x potency.

All following potencies are prepared with one minim of the preceding potency to nine minims of alcohol.

CLASS VI—*β*.

ALCOHOLIC SOLUTIONS.

One part by weight of the medicinal substance is dissolved in fifty parts by weight of alcohol.

Amount of drug power of solution, $\frac{1}{50}$.

POTENTIATION.

a. Centesimal Scale.

As the solution contains $\frac{1}{100}$ drug power, it corresponds to the 1st potency.

1 minim of the solution and 99 minims of alcohol give the 2d potency.

All following potencies are prepared with one minim of the preceding potency to ninety-nine minims of alcohol.

b. Decimal Scale.

As the solution contains $\frac{1}{100}$ drug power, it corresponds to the 2x potency.

1 minim of the solution and 9 minims of alcohol give the 3x potency.

All following potencies are prepared with one minim of the preceding potency to nine minims of alcohol.

CLASS VII.

TRITURATION OF DRY MEDICINAL SUBSTANCES.

The fundamental rule for this class is contained in Hahnemann's *Mat. Med. Pura*, under Arsenicum.

For the trituration and potentiation of dry medicinal substances the following proportions of weight and measure form the basis:

a. Centesimal Scale.

One part by weight of the medicinal substance to 99 parts by weight of sugar of milk gives the 1st trituration.

All following triturations are prepared with one grain of the preceding trituration to ninety-nine grains of sugar of milk.

Conversion into Liquid Potencies.

One grain of the 3d trituration dissolved in 50 minims of distilled water and mixed with 50 minims of alcohol gives the 4th potency.

1 minim of the 4th potency to 99 minims of alcohol gives the 5th potency.

All following potencies are prepared with one minim of the preceding potency to ninety-nine minims of alcohol.

b. Decimal Scale.

One part by weight of the medicinal substance to 9 parts by weight of sugar of milk gives the 1x trituration.

All following triturations are prepared with one grain of the preceding trituration to nine grains of sugar of milk.

Conversion into Liquid Potencies.

One grain of the 6x trituration dissolved in 50 minims of distilled water, and mixed with 50 minims of alcohol gives the 8x potency.

1 minim of the 8x potency to 9 minims of dilute alcohol gives the 9x potency.

1 minim of the 9x potency to 9 minims of alcohol gives the 10x potency.

All following potencies are prepared with one minim of the preceding potency to nine minims of alcohol.

CLASS VIII.

TRITURATION OF LIQUID SUBSTANCES.

The rule for this class is contained in Hahnemann's *Chronic Diseases*, under Petroleum.

For the trituration of these substances the following proportions of weight and measure form the basis:

a. Centesimal Scale.

One minim of the substance to 99 grains of sugar of milk gives the 1st trituration.

1 part by weight of the 1st trituration to 99 parts by weight of sugar of milk gives the 2d trituration.

All following triturations are prepared with one grain of the preceding trituration to ninety-nine grains of sugar of milk.

Conversion into Liquid Potencies.

One grain of the 3d trituration dissolved in 50 minims of distilled water, and mixed with 50 minims of alcohol gives the 4th potency.

1 minim of the 4th potency to 99 minims of alcohol gives the 5th potency.

All following potencies are prepared with one minim of the preceding potency to ninety-nine minims of alcohol.

b. Decimal Scale.

1 minim of the substance to 9 grains of sugar of milk gives the 1x trituration.

1 part by weight of the 1x trituration to 9 parts by weight of sugar of milk gives the 2x trituration.

All following triturations are prepared with one grain of the preceding trituration to nine grains of sugar of milk.

Conversion into Liquid Potencies.

One grain of the 6x trituration dissolved in 50 minims of distilled water, and mixed with 50 minims of alcohol gives the 8x potency.

1 minim of the 8x potency to 9 minims of dilute alcohol gives the 9x potency.

1 minim of the 9x potency to 9 minims of alcohol gives the 10x potency.

All following potencies are prepared with one minim of the preceding potency to nine minims of alcohol.

CLASS IX.

TRITURATION OF FRESH VEGETABLE AND ANIMAL SUBSTANCES.

For this class, the lower triturations of which cannot be preserved, the rule is found in Hahnemann's *Chronic Diseases*, under *Agaricus*.

Fresh vegetables and animals are first pounded or grated to a fine pulp, then triturated and potentized according to the following proportions by weight and measure:

a. Centesimal Scale.

Two parts* by weight of the substance and 99 parts by weight of sugar of milk give the 1st trituration.

1 part by weight of the 1st trituration to 99 parts by weight of sugar of milk gives the 2d trituration.

All following triturations are prepared with one part by weight of the preceding trituration to ninety-nine parts by weight of sugar of milk.

Conversion into Liquid Potencies.

One grain of the 3d trituration dissolved in 50 minims of distilled water and mixed with 50 minims of alcohol gives the 4th potency.

1 minim of the 4th potency to 99 minims of alcohol gives the 5th potency.

All following potencies are prepared with one minim of the preceding potency to ninety-nine minims of alcohol.

a. Decimal Scale.

Two parts by weight of the substance and 9 parts by weight of sugar of milk give the 1x trituration.

1 part by weight of the 1x trituration to 9 parts by weight of sugar of milk gives the 2x trituration.

All following triturations are prepared with one part by weight of the preceding trituration to nine parts by weight of sugar of milk.

Conversion into Liquid Potencies.

One grain of the 6x trituration dissolved in 50 minims of distilled water and mixed with 50 minims of alcohol gives the 8x potency.

1 minim of the 8x potency to 9 minims of dilute alcohol gives the 9x potency.

1 minim of the 9x potency to 9 minims of alcohol gives the 10x potency.

All following potencies are prepared with one minim of the preceding potency to nine minims of alcohol.

* Two parts are taken because of loss by evaporation during trituration.

NOMENCLATURE.

In homœopathy the old Latin nomenclature of Hahnemann's time, still used at this date in the official Pharmacopœia of the German Empire, has been retained, and adopted by all the text-books of the school. In all cases where only one species of a genus of plants is officinal, the medicine bears the name of the genus or species, and so, instead of saying *Aconitum Napellus*, we say *Aconitum*; instead of *Atropa Belladonna*, *Belladonna*. If later, another plant of the same genus is proved, as for example, *Aconitum Lycoctonum*, its name receives the distinctive addition *Lycoctonum*, while by the name *Aconitum* we always understand *Aconitum Napellus*. To avoid mistakes we give under the officinal name, in Part II, treating of Special Homœopathic Pharmaceutics, the name of the species and its synonyms.

♂ is used to denote Mother Tinctures.

Dil. (Dilutions) is used to denote Liquid Potencies or Attenuations.

Trit. is used to denote Triturations.

The simple numeral, 1, 2, 3, etc., added to the name of a remedy, signifies that the preparation has been potentized on the *Centesimal* scale.

A Latin ten (x), added to the simple numeral, viz.: 1x, 2x, 3x, etc., signifies that the preparation has been potentized on the *Decimal* scale.



PART II.

SPECIAL

HOMŒOPATHIC PHARMACEUTICS.

ABELMOSCHUS.

Synonym, *Hibiscus Abelmoschus*, *Wight and Arnott*.

Nat. Ord., *Malvaceæ*.

Common Name, Musk Seed.

This is an evergreen shrub, growing in Egypt, and in the East and West Indies, and yielding the seeds known under the names of *semen Abelmoschi*, *alceæ Egyptiacæ*, and *grana moschata*. These are about the same size as flaxseed, kidney-shaped, striated, of a grayish-brown color, of an odor like that of musk, and of a warm somewhat spicy taste.

Preparation.—The freshly dried seeds are finely powdered and covered with five parts by weight of alcohol. After mixing well, and pouring it into a well-stoppered bottle, it is allowed to stand eight days in a dark cool place, shaking it twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{16}$.

Dilutions must be prepared as directed under Class IV.

ABIES CANADENSIS, *Michaux*.

Synonym, *Pinus Canadensis*, *Willd.*

Nat. Ord., *Coniferæ*.

Common Names, Hemlock Spruce, Canada Pitch.

This is the *hemlock spruce* of the United States and Canada. When of full growth, it is often 70 or 80 feet high, with a trunk 2 or 3 feet in diameter, and of nearly uniform dimensions for two-thirds of its length. The branches are slender, and dependent at their extremities.

The leaves are very numerous, six or eight lines long, flat, denticulate, and irregularly arranged in two rows. The strobiles are ovate, a little longer than the leaves, terminal, and pendulous. The tree is abundant in Canada, Nova Scotia, and the more northern parts of New England, and is found in the elevated and mountainous regions of the Middle States.

Preparation.—The fresh bark and young buds are pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and after mixing the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, and having poured it into a well-stoppered bottle, it is allowed to stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{4}$.

Dilutions must be prepared as directed under Class III.

ABIES NIGRA, *Poir.*

Nat. Ord., Coniferae.

Common Name, Black or Double Spruce.

This tree is found growing in swamps and cold mountain woods from New England to Wisconsin and northward. Its leaves are short, being six or eight lines long, either dark green or glaucous-whitish. Cones ovate or ovate-oblong, being 1 to 1½ inches long, mostly recurved, persistent, the rigid scales with a thin, often eroded edge.

Preparation.—Two parts by weight of the gum are dissolved in nine parts by weight of 95 per cent. alcohol and designated as mother tincture.

Drug power of tincture, $\frac{1}{10}$.

Dilutions must be prepared as directed under Class VI—*a*.

ABROTANUM.

Synonym, *Artemisia Abrotanum*, *Linn.*

Nat. Ord., Compositae.

Common Names, Southernwood. Old Man.

This shrub is a native of Asia and Europe, where it is found in hedges and waste places. It is about three feet high, minutely hairy, segments of the pinnatifid leaves capillaceous; odor lemon-like; taste aromatic and bitter.

Preparation.—The fresh leaves gathered in July and August are chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, and having poured it into a well-stoppered bottle, it is allowed to stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{4}$.

Dilutions must be prepared as directed under Class III.

ABSINTHIUM.

Synonyms, *Artemisia Absinthium, Linn.* Absinthium Vulgare, *Lamarek.*

Nat. Ord., Compositæ.

Common Name, Common Wormwood.

This is a perennial plant, with branching, round, and striated or furrowed stems, which rise two or three feet in height, and are panicled at their summit. The lower portion of the stem lives several years, and annually sends up herbaceous roots, which perish in the winter. The radical leaves are triply pinnatifid, with lanceolate, obtuse, dentate divisions; those of them, doubly or simply pinnatifid, with lanceolate, somewhat acute divisions; the floral leaves are lanceolate; all are hoary. The flowers are of a brownish-yellow color, hemispherical, pedicelled, nodding, and in erect racemes. The florets of the disk are numerous, those of the ray few. The plant is a native of Europe, where it is also cultivated. It is among our garden herbs, and has been naturalized in the mountainous districts of New England.

Preparation.—The fresh young leaves and blossoms are chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, and having poured it into a well-stoppered bottle, it is allowed to stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

ACALYPHA INDICA, Linn.

Nat. Ord., Euphorbiaceæ.

Common Name, Indian Acalypha.

This plant, growing one or two feet high, is found in the East Indies. In appearance it resembles the Nettles or Amaranths.

Preparation.—The fresh plant is pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and after thoroughly mixing the pulp with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well and having poured it into a well-stoppered bottle, it is allowed to stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

ACIDUM ACETICUM GLACIALE.

Present Name, Glacial Acetic Acid.

Formula, $C_4 H_3 O_3$.

(Concentrated Acetic Acid, corresponding to at least 84 per cent. of anhydrous acid. Br.)

Preparation of Glacial Acetic Acid.—Carefully heat 13½ parts of pure crystallized acetate of sodium until the water of crystallization has been completely expelled, and the salt has been fused; the residue, weighing nearly 8½ parts, is coarsely powdered, introduced into a glass retort, immediately mixed with 9 to 9½ parts of concentrated sulphuric acid, and then distilled. It is advisable to warm the retort by placing it in a sand-bath, before the acid is added. The condensation of the acetic acid vapors may be effected either by a Liebig's condenser, or in a receiver connected directly with the retort or by means of an adapter.

The reaction is as follows: $\text{Na C}_2\text{H}_3\text{O}_2 + \text{H}_2\text{SO}_4 = \text{Na HSO}_4 + \text{HC}_2\text{H}_3\text{O}_2$. Acid sodium sulphate and acetic acid are formed, the latter distilling over, free from empyreuma if the heat has not been suddenly raised too high, and also free from sulphurous and other acids if the sodium acetate had not been contaminated with organic or other impurities.

Properties.—Glacial acetic acid crystallizes near the freezing-point of water (34° F.), and remains crystalline until the temperature rises to above 9° C. (48° F.); it contains, then, about one per cent. of water, or not less than 84 per cent. of acetic anhydrid. At the mean temperature of the air it forms a colorless liquid with a pungent acetous odor. When heated to boiling, the vapor may be ignited and burns with a blue flame. Its sp. gr. is 1.065 to 1.066. As it attracts humidity from the atmosphere, it should be preserved in well-stoppered bottles.

Tests.—Empyreumatic products, if present in considerable proportion, may be detected by the odor after the acid has been largely diluted with water, or neutralized with an alkali, smaller quantities are indicated by adding a minute quantity of solution of potassium permanganate, the color of which will readily disappear; pure acetic acid, containing less than 50 per cent. of monohydrate, is not affected by this test (Hager, Merck, 1873). Sulphuric and hydrochloric acids are detected in the diluted acid by the white precipitates occurring with barium chloride and silver nitrate respectively. If sulphurous acid be present, the hydrogen evolved by hydrochloric acid and zinc in the presence of the acetic acid will be contaminated with sulphuretted hydrogen, which will darken the color of white bibulous paper wetted with solution of subacetate of lead, and suspended in the test-tube or flask. Metallic salts, if present, will produce a coloration or precipitate with hydrosulphuric acid, after previous dilution with distilled water. Acetic acid, being volatile, must not leave any residue on evaporation.

Preparation for Homœopathic Use.—One part by weight of pure glacial acetic acid is dissolved in nine parts by weight of distilled water.

Amount of drug power, $\frac{1}{10}$.

Dilutions must be prepared as directed under Class V—*a*.

ACIDUM BENZOICUM.

Present Name, Benzoic Acid.

Formula, $\text{HC}_7\text{H}_5\text{O}_2$.

Molecular Weight, 122.

Preparation of Benzoic Acid.—Take of benzoin in coarse powder twelve troy ounces. Spread it evenly over the bottom of an iron dish eight inches in diameter and two inches deep, cover the dish with a piece of filtering-paper, and, by means of paste, attach it closely to the rim. Then, having prepared a conical receiver or cap of thick well-sized paper, of rather larger diameter than the dish, invert it over the latter so as to fit closely around the rim. Next apply heat by means of a sand-bath, or of the iron-plate of a stove, until, without much empyreuma, vapors of benzoic acid cease to rise. Lastly, separate the receiver from time to time, and remove the benzoic acid from it and the paper diaphragm as long as the acid continues to be deposited. By renewing the paper diaphragm after it has become so obstructed as to prevent the passage of vapor, an additional quantity of benzoic acid may be obtained.

Properties.—Benzoic acid is in white feathery flexible crystalline plates and needles, having an agreeable aromatic odor and a warm acidulous taste. The odor is due to the presence of a small quantity of volatile oil, produced from the benzoin during sublimation. It fuses at 120.5°C . (249°F .), and boils at 239°C . (462°F .), but volatilizes freely with the vapor of boiling water, and more slowly at a somewhat lower temperature. Its vapors are suffocating and acrid, inciting to coughing.

Tests.—Benzoic acid should completely evaporate from platinum foil. If much charcoal be left behind, the presence of other organic substances would be indicated, of which sugar manifests itself by the odor of caramel, and hippuric acid by the odor of hydrocyanic acid during the application of heat; while mineral substances will be left behind as a fixed residue. Since some varieties of benzoin contain cinnamic acid, this should always be tested for before benzoic acid is prepared. Its presence in the latter is readily ascertained by an oxidizing agent, such as chlorine or bichromate of potassium and sulphuric acid, when the odor of oil of bitter almonds will be perceived. That benzoic acid has been prepared from hippuric acid may be ascertained by tinging its solution in liquor potasse with permanganate of potassium to a deep violet color, and then boiling for a few minutes. The solution of benzoic acid from benzoin will become green; that from hippuric acid will become yellow or colorless, in consequence of a further reduction resulting from insufficient purification. Exposed to the light, benzoic acid sublimed from benzoin becomes darker in color, and separates a few oily drops of a brown color.

Preparation for Homœopathic Use.—One part by weight of pure benzoic acid is dissolved in nine parts by weight of alcohol.

Amount of drug power, $\frac{1}{10}$.

Dilutions must be prepared as directed under Class VI—*a*.

Triturations of the pure benzoic acid are prepared as directed under Class VII.

ACIDUM BORACICUM.

Present Name, Boracic Acid.

Formula, $H_3 BO_3$.

Molecular Weight, 62.

Preparation of Boracic Acid.—It is prepared by adding hydrochloric acid to a hot solution of borax, and crystallizes in white translucent scales of a slight pearly lustre.

Properties.—Boracic acid has a very slight acid taste; when heated it melts, disengaging vapors of water which contain some of the acid, and afterwards yields a transparent mass which congeals into a hard, brittle, transparent glass. Crystallized boracic acid is insoluble in ether, soluble in alcohol, and requires about 30 parts of cold and 3 parts of boiling water for solution.

Tests.—A solution in alcohol burns with a green flame; a solution in water imparts a brown color to tumeric paper, and is not precipitated by nitrate of silver or chloride of barium.

Preparation for Homœopathic Use.—The pure boracic acid is prepared by trituration, as directed under Class VII.

ACIDUM BROMICUM.

Present Names, Hydrobromic Acid. Bromic Acid.

Formula, HBr .

Molecular Weight, 81.

Formation.—This acid is formed by the direct union of its elements at a red heat, by the decomposition of sulphuric acid and other hydrogen compounds by bromine, and by the action of water upon the sulphur, phosphorus, and other compounds of bromine.

Preparation of Hydrobromic Acid.—Dr. Squibb's method (1878) is as follows: 7 parts by weight of sulphuric acid, sp. gr. 1.838 at $15.6^{\circ} C.$ ($60^{\circ} F.$) are added to one part of water, and the mixture allowed to cool, when it is slowly, and with constant stirring, added to a hot solution of 6 parts of potassium bromide in 6 parts of water. A decomposition into hydrobromic acid and sulphate of potassium will take place, $2 KBr + H_2 SO_4$ yields $2H Br + K_2 SO_4$; on setting the mixture aside for 24 hours, the salt crystallizes, the liquid is poured off into a retort, and the crystalline mass broken up, transferred to a funnel, and washed with two parts of cold water to recover adhering hydrobromic acid. The washings are likewise poured into the retort, which is placed upon a sand bath, or set upon a wire gauze, and the whole is then distilled nearly to dryness. The distillate, which weighs about ten parts, is assayed with normal solution of soda, and then diluted with distilled water so as to contain 34 per cent. of HBr . When of this strength, the acid represents one-half the bromine strength of an equal weight of potassium bromide.

Properties.—Pure hydrobromic acid is a colorless gas of a pungent and irritating odor, and produces dense white fumes in a moist atmosphere. The solution of the strength proposed by Dr. Squibb is a colorless, odorless, limpid liquid, of a strongly acid taste, and of the spe-

cific gravity 1.274 at 15.6° C. (60° F.). It contains 33.58 bromine, .42 hydrogen, and 66 water. When heated, water and a weak acid distil over, and the temperature rises to 125.5° C. (258° F.), when an acid passes over, which, according to Topsøe (1870), has at 14° C. (57.2° F.) the specific gravity 1.490, and contains 48.17 per cent. HBr.

Tests.—Hydrobromic acid should evaporate without leaving any residue. It is not precipitated by barium chloride, showing the absence of sulphuric acid, and yields, like hydrochloric acid, white precipitates with solutions of lead, mercurous and silver salts. Bromide of silver is nearly insoluble in *dilute* ammonia water, which dissolves silver chloride readily; on the subsequent addition of nitric acid, only a slight turbidity should be produced. If of the strength indicated above, 20 grains of it, when treated with nitrate of silver in excess, will yield a precipitate, which, after washing and drying, weighs 15.98 grains, and when heated in chlorine gas is converted into chloride of silver weighing 12.2 grains.

Preparation for Homœopathic Use.—One part by weight of pure hydrobromic acid is dissolved in nine parts by weight of distilled water.

Amount of drug power, $\frac{1}{10}$.

Dilutions must be prepared as directed under Class V—*a*.

ACIDUM CARBOLICUM.

Synonyms, Phenic Acid, Phenylic Alcohol, Phenol.

Present Name, Carbolic Acid.

Formula, $\text{HC}_6\text{H}_5\text{O}$.

Molecular Weight, 94.

Origin.—Carbolic acid occurs in castoreum, in the urine of man and herbivorous animals, and in the products of the dry distillation of various organic substances, such as resins, bones, wood, and more especially coal. It is from the latter source that it is obtained in the arts.

Preparation of Carbolic Acid.—That portion of coal tar which is known as *dead oil* is subjected to distillation. The portion distilling between 150° and 200° C. (302° and 392° F.) is collected separately. It is agitated with warm concentrated solution of potassa and some solid potassa, when it crystallizes. On being dissolved in water, the empyreumatic oils separate, and are removed from the aqueous solution of the potassium phenylate, which, on being supersaturated with hydrochloric acid, yields the phenol in the form of an oily liquid. This is repeatedly agitated with water, then digested with chloride of calcium for the purpose of removing the water, and distilled. The portion passing over between 180° and 190° C. (336° and 374° F.) is collected separately, and exposed to a low temperature, when it solidifies into a crystalline mass, from which the mother-liquor is drained off and expressed. It may be again distilled or further purified by combining again with potassa, and repeating the operations described before.

Absolutely pure carbolic acid is obtained (Church, 1871) from

the nearly pure commercial product, by treating it with a quantity of water (about 20 parts) insufficient to dissolve it completely, removing the undissolved portion, and saturating the clear aqueous solution with pure table salt, when the carbolic acid separates as an oily layer, requiring distillation over some quicklime to obtain it crystallized. The portion passing up to 185° C. (365° F.) has, at ordinary temperatures, merely a very faint aromatic odor.

Properties.—Absolutely pure carbolic acid has a faint aromatic odor, is colorless, crystalline, and does not absorb moisture from the atmosphere. Usually, however, it retains a minute quantity of water, by which it becomes deliquescent; with a little more of water it forms an oily liquid at ordinary temperatures, and if traces of the tar products are present, it acquires a reddish color on exposure. It is freely soluble in alcohol, ether, chloroform, bisulphide of carbon, glycerin, the essential and fatty oils, and in glacial acetic acid. The purer the acid, the more soluble it is in water. The fusing-point of crystallized carbolic acid is influenced by the amount of water, with which it is combined; pure carbolic acid fuses at 40° to 41° C. (104° to 105.8° F.), and boils at 180° to 180.5° C. (356° to 357° F.). The sp. gr. of carbolic acid is 1.065; it coagulates albumen, and separates nitrocellulose in a gelatinous form from collodion. A piece of fine wood dipped into an alkaline solution of the acid and afterwards into hydrochloric acid, assumes in the course of half an hour a deep blue color. The solution of carbolic acid has no effect on polarized light. The concentrated alcoholic solution yields with ferric chloride a brown liquid, which, on the addition of much water remains transparent, and assumes a beautiful and permanent blue color.

Tests.—The purity of carbolic acid is recognized by the properties described above, and by the absence of all reaction upon blue and red litmus paper.

Preparation for Homœopathic Use.—One part by weight of pure crystallized carbolic acid is dissolved in nine parts by weight of alcohol.

Amount of drug power, $\frac{1}{16}$.

Dilutions must be prepared as directed under class VI—*a*.

ACIDUM CHROMICUM.

Present Name, Chromic Acid.

Formula, Cr O_3 .

Molecular Weight, 100.5.

Preparation of Chromic Acid.—This acid, discovered by Vanquelin (1797), is readily obtained on pouring three measures of concentrated sulphuric acid into two measures of a cold saturated solution of bichromate of potassium in water, the reaction occurring as follows: $\text{K}_2\text{Cr}_2\text{O}_7 + 2\text{H}_2\text{SO}_4 = 2\text{CrO}_3 + 2\text{KHSO}_4 + \text{H}_2\text{O}$. The French Codex gives the following directions: Dissolve, with the aid of heat, one part of bichromate of potassium in ten parts of water; allow the solution to cool to 25° C. (77° F.), and add in small portions and with

continued stirring 20 parts of sulphuric acid, spec. grav. 1.84; set the mixture aside for 24 hours, and then decant the liquid. Collect the crystals in a glass funnel, the neck of which is imperfectly closed with fragments of glass, drain and finally dry the acid by keeping it for two days upon porous tiles in a drying closet at 35° C. (95° F.).

Properties.—Thus obtained, it occurs in needles of quadrangular prisms of a deep crimson-red color, deliquescent, and very soluble in water; the concentrated solution is of a red-brown color, which changes to orange on being diluted. Gradually heated, the crystals assume a blackish-brown color, and, at a temperature of 180° to 190° C. (356° to 374° F.), fuse into a reddish-brown liquid, which on cooling becomes a red, opaque, brittle mass. At a higher heat the acid is decomposed into oxygen and chromic oxide. If strong alcohol is dropped upon the acid, a vigorous action takes place, accompanied with increase of temperature and ignition of the alcohol. Chromic acid dissolved in diluted alcohol is gradually deoxidized at the ordinary temperature, the alcohol being converted into aldehyd and acetic acid. The same reduction takes place in the presence of arsenious, sulphurous, and hydrosulphuric acids, and of organic compounds and deoxidizing agents generally.

Chromic acid contains no water of crystallization; its salts have mostly a yellow or yellowish-red color; those of the alkalies and of magnesium are soluble in water; all others dissolve in nitric acid.

Tests.—Sulphuric acid and bichromate of potassium may contaminate chromic acid. The former is detected by adding to its hot aqueous solution some hydrochloric acid, deoxidizing with alcohol until the liquid becomes green, and then adding some chloride of barium, when a white precipitate will be produced; the latter, by concentrating the green solution as much as possible, and adding a concentrated solution of tartaric acid, when crystalline bitartrate of potassium will be separated.

Preparation for Homœopathic Use.—One part by weight of pure chromic acid is dissolved in nine parts by weight of distilled water.

Amount of drug power, $\frac{1}{16}$.

Dilutions must be prepared as directed under Class V—*a*.

ACIDUM CHRYSOPHANICUM.

Present Name, Chrysophanic Acid.

Formula, $C_{14}H_{10}O_4$.

Molecular Weight, 242.

Origin.—This acid was obtained in a resinous condition by Schrader (1819) from a common lichen, *Parmelia parietina*, Linn., was obtained pure by Rochleder and Heldt (1843), soon after prepared from rhubarb by Schlossberger and Döpping (1844), and also found in the roots of *Rumex*, and of cultivated rhubarb. *Parietin*, *parietinic acid*, *rhein*, *rhabarbarin*, *rhabarbaric acid*, *rhaponticin*, *lapathin*, and *rumicin* are names formerly given to the more or less impure acid, as obtained from the sources designated. Attfield (1875) found it in Goa powder

Preparation of Chrysophanic Acid.—The common wall lichen is exhausted with weak alcohol containing potassa in solution, the tincture precipitated by acetic acid, and the yellow flakes crystallized from alcohol (Rochleder). The precipitate occurring in tincture of rhubarb yields chrysophanic acid when treated with benzol; or rhubarb may be exhausted with cold water, and the residue, after drying with benzol; on concentrating the benzol solution chrysophanic acid crystallizes on cooling (Schlossberger). By the last-mentioned process it is abundantly obtained from Goa powder (Attfield).

Properties.—Chrysophanic acid is a granular, pale or orange-yellow powder, and when pure crystallizes in bright yellow needles or plates. It is inodorous and nearly tasteless. It is almost insoluble in cold water, but imparts a bright yellow color to boiling water, and requires 224 parts of boiling 86 per cent. alcohol for solution. It crystallizes from its concentrated solutions in hot alcohol, amyllic alcohol, glacial acetic acid and ether, and is freely soluble in benzol, chloroform, fixed and volatile oils, and the hydrocarbons of coal-tar.

Tests.—Strong sulphuric acid dissolves it with a bright red color, and separates it again in yellow floccules on adding the solutions to water. Alkalies dissolve it with a deep red color; the solutions produce with alum a rose-colored lake, and with lead salts precipitates which may vary in color from yellowish to pinkish or bright red. As found in commerce, it is often amorphous and impure.

Preparation for Homœopathic Use.—The pure chrysophanic acid is prepared by trituration as directed under Class VII.

ACIDUM CITRICUM.

Present Name, Citric Acid.

Formula, $\text{H}_2\text{OH}_3\text{C}_6\text{H}_5\text{O}_7$, or $\text{H}_3\text{Ci Aq}$.

Molecular Weight, 210.

Origin.—This acid occurs in a large number of plants, either in the free state, or combined with potassium or calcium, and frequently associated with malic acid. It has been found in the rhizomes of *Asarum Europæum* and *Sanguinaria Canadensis*, in the tubers of dahlia and Jerusalem artichoke, in the herb of lactuca and tobacco, and in many fruits, such as capsicum, tomatoes, tamarinds, cherries, gooseberries, raspberries, whortleberries, cranberries, blackberries, strawberries, etc. It occurs most abundantly, however, and as free acid, in the fruits of the *Aurantiaæ*, and is prepared in large quantities from the juice of the lemon and the lime.

Preparation of Citric Acid.—“Take of lemon juice, four pints (Imperial measure); prepared chalk, four ounces and a half (avoirdupois); sulphuric acid, two fluid ounces and a half; distilled water, a sufficiency. Heat the lemon juice to its boiling point, and add the chalk by degrees till there is no more effervescence. Collect the deposit on a calico filter, and wash it with hot water till the filtered liquid passes from it colorless. Mix the deposit with a pint (Imp. meas.) of distilled water, and gradually add the sulphuric acid pre-

viously diluted with a pint and a half (Imp. meas.) of distilled water. Boil gently for half an hour, keeping the mixture constantly stirred. Separate the acid solution by filtration, wash the insoluble matter with a little distilled water, and add the washings to the solution. Concentrate the solution to the density of 1.21, then allow it to cool, and after twenty-four hours decant the liquor from the crystals of sulphate of lime which have formed; further concentrate the liquor until a film forms on its surface, and set it aside to cool and crystallize. Purify the crystals if necessary by a recrystallization."—Br.

Properties.—Citric acid is a white, crystallized solid, often in large crystals, having the form of rhomboidal prisms with dihedral summits. It is permanent in a dry air, but becomes moist in a damp one. Its sp. gr. is 1.6. Its taste is strongly acid, and almost caustic. When heated, it dissolves in its water of crystallization, and, at a higher temperature, undergoes decomposition, becoming yellow or brown, and forming a very sour syrupy liquid, which is uncrystallizable. By destructive distillation it gives rise to water, empyreumatic oil, acetic and carbonic acids, carburetted hydrogen, and a number of pyrogenous acids, among which is the *aconitic*. A voluminous coal is left. Citric acid dissolves in three-fourths of its weight of cold, and half its weight of boiling water. It is soluble also in alcohol, but is insoluble in pure ether. A weak solution of it has an agreeable taste, but cannot be kept, as it undergoes spontaneous decomposition. It is incompatible with alkaline solutions, whether pure or carbonated, converting them into citrates. It is characterized by its taste, by the shape of its crystals, and by forming an insoluble salt with lime-water when heated, and a deliquescent one with potassa.

Tests.—If sulphuric acid be present, the precipitate by acetate of lead will not be entirely soluble in nitric acid; the insoluble portion being sulphate of lead. Sometimes crystals of tartaric acid are substituted for or mixed with the citric, or the two acids may be mixed in powder, a fraud which is readily detected by adding a solution of carbonate of potassium to one of the suspected acids; when, if tartaric acid be present, a crystalline precipitate of bitartrate of potassium (cream of tartar) will be formed. Another test is permanganate of potassium, of which an alkaline solution is without action on citric acid; while, under the action of tartaric acid, the peroxide of manganese is deposited. The aqueous solution of citric acid is not darkened by sulphuretted hydrogen, gives no precipitate when added in excess to solution of acetate of potassa, or of chloride of barium, and, if sparingly added to cold lime-water, does not render it turbid; showing the absence of metals, and of oxalic, tartaric, and sulphuric acids. Lime or other fixed impurity is detected by incinerating the acid, alone or with red oxide of mercury, when the fixed matter will be left.

Preparation for Homœopathic Use.—The pure citric acid is prepared by trituration, as directed under Class VII.

ACIDUM FLUORICUM.

Present Names, Fluoric Acid. Hydrofluoric Acid.

Formula, HF.

Molecular Weight, 20.

Preparation of Fluoric Acid.—This acid is prepared by distilling pure fluorspar (calcium fluoride) in a state of fine powder with sulphuric acid. As the acid dissolves glass, the distillation must be performed in platinum vessels, and the acid can only be preserved in bottles of the same, or in bottles made of gutta-percha.

Tests.—Place a drop of the aqueous solution on a slip of glass, let it remain a few minutes, then wash it off, and hold the glass so that the eye may glance over the polished surface, when the spot where the liquid was will be found to have entirely lost its polish, some of the glass having been dissolved.

Preparation for Homœopathic Use.—One part by weight of pure fluoric acid is dissolved in 99 parts by weight of distilled water, and must be preserved in gutta-percha vials.

Amount of drug power, $\frac{1}{100}$.

Dilutions must be prepared as directed under Class V— β , except that distilled water must be used for all dilutions to the 3 or 6x, gutta-percha vials being employed for diluting as well as for preserving.

ACIDUM FORMICICUM.

Present Name, Formic Acid.

Formula, HCHO_2 .

Molecular Weight, 46.

Origin and Preparation.—This acid was first discovered in the red ant (*Formica rufa*, Linn.), but is also found in some caterpillars, old oil of turpentine, nettles and other plants, and is formed by the action of black oxide of manganese and sulphuric acid or of chlorinated lime upon starch, sugar, and other carbohydrates and allied compounds. Lorin (1865) observed that, in the presence of glycerin and some water, oxalic acid is readily decomposed into formic acid and carbonic acid gas; $\text{C}_2\text{H}_2\text{O}_4$ yields $\text{CH}_2\text{O}_2 + \text{CO}_2$. Berthelot prepares it by heating in a retort 10 parts each of oxalic acid and glycerin and 1 or 2 parts of water to a little over 100°C . (212°F). After about 12 hours the decomposition is complete, and the formic acid still remaining in the retort is obtained by adding repeatedly 5 parts of water and distilling.

Properties.—Anhydrous formic acid is a colorless liquid of 1.235 sp. gr., crystallizing below the freezing point of water, having a pungent acid odor, and producing a burning sensation when applied to the skin. Diluted with water, it is less caustic. It is readily soluble in water and alcohol.

Preparation for Homœopathic Use.—One part by weight of pure formic acid is dissolved in nine parts by weight of distilled water.

Amount of drug power, $\frac{1}{10}$.

Dilutions must be prepared as directed under Class V— α .

ACIDUM GALLICUM.

Present Name, Gallic Acid.

Formula, $H_3 C_7 H_3 O_8, H_2 O.$

Molecular Weight, 188.

Origin.—Gallic acid is found in nutgalls, sumach, uva ursi, and in a number of other astringent plants. It is most advantageously prepared from nutgalls by Scheele's process, as modified by Pelouze and Robiquet.

Preparation of Gallic Acid.—Take of nutgall in fine powder 36 troy ounces; purified animal charcoal and distilled water, each a sufficient quantity. Mix the nutgall with enough distilled water to form a thin paste, and expose the mixture to the air, in a shallow glass or porcelain vessel, in a warm place, for a month, occasionally stirring it with a glass rod, and adding from time to time sufficient distilled water to preserve the semifluid consistence. Then submit the paste to expression, and, rejecting the expressed liquid, boil the residue in eight pints of distilled water for a few minutes, and filter, while hot, through purified animal charcoal. Set the liquid aside that crystals may form, and dry them on bibulous paper. If the crystals be not sufficiently free from color, they may be purified by dissolving them in boiling distilled water, filtering through a fresh portion of purified animal charcoal, and again crystallizing.

Properties.—Gallic acid is in fine white or pale fawn-colored silky needles, which have a slightly acid and astringent taste, and are inodorous. It is soluble in 100 parts of cold and three parts of boiling water. The solution has an acid reaction, and gives no precipitate with ferrous sulphate. Gallic acid is freely soluble in alcohol, less so in ether. At 100° C. (212° F.), it loses 9.5 per cent. of water of crystallization. Heated to between 200° and 215° C. (392° and 419° F.), it melts and then yields carbonic acid gas and a sublimate of pyrogallie acid = $C_6 H_6 O_3$. It is entirely dissipated by heat.

Tests.—Tannin is indicated in the aqueous solution of gallic acid by the white curdy precipitate produced on the addition of a solution of gelatin. Resinous substances would be insoluble in boiling water; sugar and dextrine would remain undissolved on treatment with spirit of ether, and mineral admixtures would remain behind upon heating the acid to redness.

Preparation for Homœopathic Use.—The pure gallic acid is prepared by trituration, as directed under Class VII.

ACIDUM HYDROCYANICUM.

Present Name, Hydrocyanic Acid.

Common Name, Prussic Acid.

Formula, $HCN = HCy.$

Molecular Weight, 27.

Origin.—Hydrocyanic acid has been found in the root of *Janipha Manihot*, and in the bark, leaves, flowers, and seeds of many shrubs and trees belonging to the sub-orders *Amygdaleæ* and *Pomeæ* of the

order Rosaceæ. It occurs in the free state only in some of the more juicy parts of these plants, but a larger quantity is formed on macerating the parts indicated in cold water, when the amygdalin contained therein is split by the action of emulsion, or a similar ferment, into sugar, oil of bitter almonds, and hydrocyanic acid; $C_{20}H_{27}NO_{11}$ (amygdalin) + $2H_2O$ yields $2C_6H_{12}O_6$ (glucose) C_7H_6O (oil of bitter almonds) + HCN (hydrocyanic acid). It is likewise found among the products of the reaction of nitric and nitrous acids upon many organic compounds, and of gaseous ammonia upon incandescent charcoal. For medical purposes it is mostly prepared by the decomposition of ferrocyanide of potassium by means of sulphuric acid.

Preparation of Hydrocyanic Acid.—Take of ferrocyanide of potassium two troy ounces; sulphuric acid a troy ounce and a half; distilled water a sufficient quantity. Mix the acid with four fluid ounces of distilled water, and pour the mixture, when cool, into a glass retort. To this add the ferrocyanide of potassium, dissolved in ten fluid ounces of distilled water. Pour eight fluid ounces of distilled water into a cooled receiver, and, having attached this to the retort, distil, by means of a sand-bath, with a moderate heat, six fluid ounces. Lastly, add to the product five fluid ounces of distilled water, or as much as may be sufficient to render the diluted hydrocyanic acid of such a strength, that twelve and seven tenths grains of nitrate of silver, dissolved in distilled water, may be accurately saturated by one hundred grains of the acid. This product recognized as the *Diluted Hydrocyanic Acid* is the only one employed for medicinal purposes. The methods of obtaining the *anhydrous* acid are different.

Properties of the Medicinal Acid.—Diluted hydrocyanic acid, of the proper medicinal strength, is a transparent, colorless, volatile liquid, possessing a peculiar smell, and a taste at first cooling and afterwards somewhat irritating. It imparts a slight and evanescent red color to litmus. It is liable to undergo decomposition if exposed to the light, but is easily kept in a bottle covered with black paint or black paper. It contains about two per cent. of anhydrous hydrocyanic acid.

Tests.—If it reddens litmus strongly and permanently, the fact shows the presence of some acid impurity. It is not reddened by the iodocyanide of potassium and mercury. The non-action of this test shows the absence of contaminating acids, which, if present, would decompose the test, and give rise to the red iodide of mercury. Its most usual impurities are sulphuric and muriatic acids, the former of which may be detected by chloride of barium, which will produce a precipitate of sulphate of barium; and the latter, by precipitating with nitrate of silver, when so much of the precipitate as may be chloride of silver will be insoluble in boiling nitric acid, while the cyanide of silver is readily soluble.

Preparation for Homœopathic Use.—Diluted hydrocyanic acid (containing about 2 per cent. of anhydrous hydrocyanic acid) is mixed with equal parts by weight of distilled water.

Amount of drug power, $\frac{1}{160}$.

Dilutions must be prepared as directed under Class VI— β .

ACIDUM LACTICUM.**Present Name,** Lactic Acid.**Formula,** $\text{HC}_3\text{H}_5\text{O}_3$.**Molecular Weight,** 90.

Origin.—Lactic acid was discovered by Scheele in sour milk, in which it results from the spontaneous fermentation of the sugar of milk under the influence of the casein; $\text{C}_{12}\text{H}_{24}\text{O}_{12}$ (milk sugar) yields 4 $\text{HC}_3\text{H}_5\text{O}_3$ (lactic acid). This transformation of the former into the latter is called the *lactic fermentation*. A similar change is produced in dextrin, glucose, cane-sugar, etc., by the action of casein, and other protein compounds; lactic acid is, therefore, met with in many vegetable products which have turned sour.

Preparation of Lactic Acid.—100 parts of sugar are dissolved in sufficient water to yield a solution of 8° or 10° B.; 8 or 10 parts of fresh cheese and 50 parts of prepared chalk are added, and the mixture placed for several weeks in a sunny place, when lactate of calcium will be found crystallized (Pelouze). Boutron and Frémy dissolve 300 grams of milk-sugar in 4 liters of skimmed milk, expose the mixture to a temperature of from 15° to 20° C. (59° to 68° F.), and neutralize every other day with bicarbonate of sodium. When it ceases to acquire an acid reaction, the liquid is boiled, filtered, and carefully evaporated to a syrupy consistence; this is dissolved in strong alcohol, the sodium precipitated by sulphuric acid, and the lactic acid converted into lactate of calcium by the addition of chalk. This salt is then decomposed by an ascertained accurate amount of sulphuric or oxalic acid.

Properties.—Official lactic acid is a syrupy, nearly transparent, pale wine-yellow liquid, having a slight bland odor, a very sour taste, and the specific gravity 1.212 (1.24 P. G.); the pure acid is colorless, inodorous, and has the specific gravity 1.215 at 20.5° C. (68.9° F.), or according to Mendeleeff 1.2485 at 15° C. (59° F.). It unites in all proportions with water and alcohol, and is soluble in ether. It coagulates milk and albumen. Heated in the air, it decomposes, giving off a suffocating odor, and leaving a spongy charcoal, which is finally completely consumed. 90 grains of the official acid are neutralized by not less than 75 grains of bicarbonate of potassium, indicating not less than 75 per cent. of $\text{HC}_3\text{H}_5\text{O}_3$.

Tests.—Treated with a hot solution of potassa, lactic acid is not materially colored; if it readily becomes brown, extractive matters are present. Dissolved in strong alcohol, gum and some mineral salts are left behind. Treated with ether, glycerine, glucose, mannit, and most salts remain behind. Acetic and butyric acids are recognized by their odor, which becomes more apparent on warming. In the diluted acid, calcium salts are indicated by oxalate of ammonium; lead, by hydro-sulphuric acid; zinc, after neutralization with ammonia, by sulphhydrate of ammonium; sulphuric acid, by chloride of barium; muriatic acid, by nitrate of silver; and oxalic acid, by chloride of calcium, after previously diluting the acid with 20 times its quantity of water, and neutralizing with ammonia.

Preparation for Homœopathic Use.—One part by weight of pure lactic acid is dissolved in fifty parts by weight of alcohol.

Amount of drug power, $\text{℞} \frac{1}{50}$.

Dilutions must be prepared as directed under Class VI— β .

ACIDUM MOLYBDÆNICUM.

Present Name, Molybdic Acid.

Preparation of Molybdic Acid—To obtain this acid, calcine sulphuret of molybdenum at a red heat in an open vessel, and extract the acid by means of caustic ammonia. To free it from this combination, precipitate it by nitric or acetic acid, or expose the compound to a high heat, and wash the acid obtained in water, dry and melt it in a glass vessel or a platina crucible.

Properties.—This is a white, porous, light mass, fusible, volatile, becoming yellow at a high temperature, of a metallic taste, soluble in 570 parts of cold water.

Preparation for Homœopathic Use.—The pure molybdic acid is prepared by trituration, as directed under Class VII.

ACIDUM MURIATICUM.

Synonyms, Hydrochloric Acid. Acidum Hydrochloridum. Chlorohydric Acid. Muriatic Acid.

Present Name, Hydrochloric Acid.

Common Names, Spirit of Sea-Salt. Marine Acid.

Formula, HCl.

Molecular Weight, 36.5.

The muriatic acid of pharmacy and the arts is a solution of muriatic acid *gas* in water. It is sometimes called *liquid* muriatic acid, but more properly *aqueous* muriatic acid.

Origin.—Hydrochloric acid occurs in the uncombined state among the gases emitted by active volcanoes, and in combination its radical, chlorine, is found in numerous minerals, prominent among which is chloride of sodium or common salt, which is also one of the most important constituents of sea-water, and the source of nearly all the muriatic acid of commerce.

Preparation of Muriatic Acid.—"Take of chloride of sodium, dried, forty-eight ounces (avoirdupois); sulphuric acid, forty-four fluid-ounces; water, thirty-six fluid-ounces; distilled water, fifty fluid-ounces. Pour the sulphuric acid slowly into thirty-two fluid-ounces of the water, and when the mixture has cooled, add it to the chloride of sodium previously introduced into a flask having the capacity of at least one gallon (imp. measure). Connect the flask by corks and a bent glass tube with a three-necked wash-bottle, furnished with a safety tube, and containing the remaining four fluid-ounces of the water; then, applying heat to the flask, conduct the disengaged gas through the wash-bottle, into a second bottle containing the distilled water, by means of a bent tube dipping about half an inch below the surface; and let the process be continued until the product measures sixty-six

fluid-ounces, or the liquid has acquired a sp. gr. of 1.16. The bottle containing the distilled water must be kept cool during the whole operation." (Br.)

Properties of the Pure Acid—Muriatic acid, when pure, is a transparent colorless liquid, of a suffocating odor and corrosive taste. Exposed to the air it emits white fumes, owing to the escape of the acid gas, and its union with the moisture of the atmosphere. When concentrated, it blackens organic substances like sulphuric acid. It freezes at 60° F. below zero. When exposed to heat, it continues to give off muriatic acid gas, with the appearance of ebullition, until its sp. gr. falls to 1.094, when it properly boils, and distils over unchanged. Muriatic acid is characterized by forming, on the addition of nitrate of silver, a white precipitate (chloride of silver), which is insoluble in nitric acid, but readily soluble in ammonia.

Tests.—This acid, when pure, will evaporate without residue in a platinum spoon. If sulphuric acid be present, a solution of chloride of barium will cause a precipitate of sulphate of barium in the acid, previously diluted with distilled water. Iron may be detected by saturating the diluted acid with carbonate of sodium, and then adding ferrocyanide of potassium, which will strike a blue color if that metal be present. The absence of arsenic may be inferred if it do not tarnish bright copper foil when boiled with it, and of this as well as other metallic impregnation, excepting that of iron, by its giving no precipitate with sulphuretted hydrogen. Ammonia in excess shows the absence of iron, if it produces no precipitate. Free chlorine or nitric acid may be discovered by its having the power to dissolve goldleaf. Any minute portion of the leaf which may be dissolved is detected by adding a solution of protochloride of tin, which will give rise to a purplish tint. The free chlorine is derived from the reaction of nitric or hyponitric acid on a small portion of the muriatic acid, which is thus deprived of its hydrogen. Hence it is that, when free chlorine is present, hyponitric acid or some other oxide of nitrogen is also present as an impurity. The nitric and hyponitric acids are derived from nitrates in the common salt, and from hyponitric acid in the commercial sulphuric acid employed in the preparation of the muriatic acid.

Preparation for Homœopathic Use.—One part by weight of pure muriatic acid (spec. grav. 1.16) is dissolved in two parts by weight of distilled water.

Amount of drug power, $\frac{1}{16}$.

Dilutions must be prepared as directed under Class V—*a*.

ACIDUM NITRICUM.

Synonym, Aqua Fortis.

Present Names, Hydric Nitrate. Nitric Acid.

Formula, HNO_3 .

Molecular Weight, 63.

Nitric Acid, of the specific gravity 1.420.

Origin.—Nitric acid occurs chiefly in combination with the alkalies and alkaline earths, and in localities where vegetable or animal mat-

ter has undergone putrefaction. It is found in the juice of many plants, and in small quantities in rain and snow-water. It is prepared for medicinal and technical purposes by decomposing the nitrate of sodium or of potassium by sulphuric acid.

Preparation of Nitric Acid.—The usual practice, adopted in the laboratory for obtaining nitric acid, is to add to nitrate of potassium in coarse powder, contained in a retort, an equal weight of strong sulphuric acid, poured in by means of a tube or funnel, so as not to soil the neck. The materials should not occupy more than two-thirds of the capacity of the retort. A receiver being adapted, heat is applied by means of a spirit-lamp, the naked fire, or a sand-bath, moderately at first, but afterwards more strongly when the materials begin to thicken, in order to bring the whole into a state of perfect fusion. Red vapors will at first arise, and afterwards disappear in the course of the distillation. Towards its close they will be reproduced, and their reappearance will indicate that the process is completed.

Nitric Acid. (sp. gr. 1.42.) **Quadrihydrated Nitric Acid.**—This is the acid now officinal in both the U. S. and Br. Pharmacopœias. To satisfy the tests, it must be colorless and entirely volatilizable by heat; must dissolve copper with the disengagement of red vapours; and, when diluted with at least six times its bulk of distilled water, must not be precipitated by hydrosulphuric acid, nitrate of silver, or chloride of barium. Acid of the density of 1.42 is the most stable of the hydrated compounds of nitric acid, and boils at 250° F. When either stronger or weaker than this, it distils over at a lower temperature; and, by losing more acid than water in the first case, and more water than acid in the second, constantly approaches to the sp. gr. 1.42, when its boiling point becomes stationary. These facts in relation to quadrihydrated nitric acid were first observed by Dalton, and have since been confirmed by Mr. Arthur Smith, of London. This acid consists of one eq. of dry acid and four of water ($4\text{HO}, \text{NO}_2$); but as only one of the eq. of water is *basic*, the other three being *constitutional*, the true formula is $\text{HO}, \text{NO}_2 + 3\text{HO}$. "Ninety grains by weight of it, mixed with half an ounce of distilled water, require, for neutralization, 1000 grain-measures of the volumetric solution of soda." —(Br.)

General Properties.—Nitric acid, so called from nitre, is a liquid, extremely sour and corrosive. When perfectly pure it is colorless. The concentrated acid, when exposed to the air, emits white fumes, possessing a disagreeable odor. By the action of light it undergoes a slight decomposition, and becomes yellow. It acts powerfully on animal matter, causing its decomposition. On the living fibre it operates as a strong caustic. It stains the skin and most animal substances of an indelible yellow color. When mixed with muriatic acid, mutual decomposition takes place, and a liquid is formed capable of dissolving gold, called nitromuriatic acid or aqua regia.

Tests.—The most common impurities in nitric acid are sulphuric acid and chlorine; the former derived from the acid used in the process for obtaining it, the latter from common salt, which is not an un-

frequent impurity in nitre. They may be detected by adding a few drops of the solution of chloride of barium and of nitrate of silver to separate portions of the nitric acid, diluted with three or four parts of distilled water. If these reagents should produce a precipitate, the chloride will indicate sulphuric acid, and the nitrate, chlorine. Iodine may be detected by saturating the suspected acid with a carbonated alkali, pouring in a little clear solution of starch, and then adding a few drops of sulphuric acid. If iodine be present the sulphuric acid will set it free, and the starch solution will become blue.

Preparation for Homœopathic Use.—One part by weight of pure nitric acid (sp. gr. 1.42) is dissolved in nine parts by weight of distilled water.

Amount of drug power $\frac{1}{10}$.

Dilutions must be prepared as directed under Class V—*a*.

ACIDUM OXALICUM.

Present Names, Oxalic Acid. Dihydric oxalate.

Formula, $H_2 C_2 O_4, 2H_2O$.

Molecular Weight, 126.

Origin and Formation.—Oxalic acid occurs in combination with ammonium in guano, and with calcium in a large number of plants, among which may be mentioned the following officinal drugs: rhubarb, ginger, squills, valerian, quassia, etc. It is found as acid potassium oxalate in the leaves and stalks of *phytolacca*, *belladonna*, and several species of *rumex*, *rheum*, and *oxalis*, taking its name from the last-named genus.

Preparation of Oxalic Acid.—One part of sugar, molasses, or starch is mixed in a retort with eight parts of nitric acid spec. grav. 1.38; a gradual heat is applied until the liquid finally boils, and red nitrous acid vapors cease to be given off; it is then concentrated by evaporation to one-sixth of its volume, and set aside to crystallize. The crystals are drained from the mother liquor and recrystallized from hot water. This is the process of Scheele and Bergman (1776), modified in the strength of nitric acid by Schlesinger (1841). Schlesinger obtained from 100 parts of sugar 58 to 60 parts of handsomely crystallized oxalic acid.

Properties.—Oxalic acid crystallizes from the aqueous solution in flat, oblique, rhombic prisms, which are colorless, transparent, and soluble in about eight parts of water at the ordinary temperature and in nearly all proportions at the boiling temperature. They dissolve in $2\frac{1}{2}$ parts of cold and 1.8 parts of boiling strong alcohol, and are but little soluble in ether. Oxalic acid fuses at $98^\circ C.$ ($208.4^\circ F.$) and at about $160^\circ C.$ ($320^\circ F.$) sublimes partly unaltered and is partly decomposed into carbonic acid and carbonic oxide, without leaving any residue.

Tests.—Mineral impurities are left behind on incinerating the oxalic acid upon platinum foil; organic impurities will blacken concentrated sulphuric acid on boiling. Sulphuric acid, if present, will produce, with nitrate of barium, a white precipitate which is insoluble in diluted nitric acid.

Preparation for Homœopathic Use.—One part by weight of pure oxalic acid is dissolved in ninety-nine parts by weight of distilled water.

Amount of drug power, $\frac{1}{100}$.

Dilutions must be prepared as directed under Class V— β .

ACIDUM PHOSPHORICUM.

Present Names, Phosphoric Acid. Hydric Phosphate.

Formula, HPO_3 .

Molecular Weight, 80.

Preparation of Phosphoric Acid.—About equal parts of bones burned to whiteness, and sulphuric acid diluted with 15 parts of water, are digested for some time until the insoluble part has been converted into white, smooth sulphate of calcium; the liquid, containing sulphuric and phosphoric acids, and holding calcium and magnesium phosphates in solution, is removed by filtration and washing with water, neutralized with ammonia or carbonate of ammonium, separated from the precipitated phosphates and evaporated to dryness. The ammonium phosphate is then heated in a platinum crucible to redness until the ammonia has been completely driven off. Porcelain capsules are corroded in this last operation. The fused acid is poured upon polished iron plates, and, when cool, put into bottles.

Thus prepared, phosphoric acid contains a little sodium, to free it from which Neustadt (1861) proposes to precipitate the neutralized acid with barium chloride, and to decompose the resulting phosphate of barium, after it has been thoroughly washed, with sulphuric acid; the acid filtrate is then evaporated and heated to redness.

Properties.—Glacial phosphoric acid is in colorless, transparent, glass-like masses, which are slowly deliquescent in the air, and soluble in water and in alcohol; the solution has a strongly acid taste.

Tests.—The aqueous solution of glacial phosphoric acid is not precipitated on standing for two days, after having been saturated with hydro-sulphuric acid (arsenic, lead). When boiled for some time, and then supersaturated with ammonia, no precipitate is produced, with the exception of a slight turbidness (calcium, magnesium). With caustic potassa in excess, ammonia is not evolved. If completely precipitated by acetate of lead, the filtrate, after the excess of lead has been removed by sulphuretted hydrogen, leaves, on evaporation, only a very minute residue (potassium, sodium).

Preparation for Homœopathic Use.—One part by weight of purified glacial phosphoric acid is dissolved in nine parts by weight of distilled water.

Amount of drug power, $\frac{1}{100}$.

Dilutions must be prepared as directed under Class V— α , except that dilute alcohol is used for the 2x, and strong alcohol for the 3x dilutions.

ACIDUM PICRICUM.**Present Name,** Picric Acid.**Formula,** $\text{HC}_6\text{H}_2(\text{NO}_2)_3\text{O}$.**Molecular Weight,** 229.

Preparation of Picric Acid.—This acid was discovered by Hausmann (1788), and its composition investigated by Liebig, Dumas, and others. It may be obtained by the action of nitric acid upon Salicin and its derivatives, phloridzin, indigo, aloes, benzoin, silk and other substances, and is best prepared by gradually adding carbolic acid to fuming nitric acid and heating the mixture, when, on cooling, the new compound will crystallize, and may be purified by washing with cold water and crystallizing from boiling water or diluted alcohol; $\text{C}_6\text{H}_6\text{O} + 3\text{HN O}_3$ yields $\text{C}_6\text{H}_3(\text{NO}_2)_3\text{O} + 3\text{H}_2\text{O}$.

Properties.—Picric acid crystallizes in bright yellow needles or scales, which on being heated, melt and sublime without decomposition, forming yellow suffocating vapors which condense again to crystals. It has an acrid and extremely bitter taste, dissolves at 15°C . (59°F .) in 86 parts water, forming a bright yellow solution, and is readily soluble in alcohol and ether. Its solutions stain the skin and other organic matter permanently yellow; hence its use in dyeing. The aqueous solution precipitates gelatin. It unites with bases, forming salts which are mostly yellow, have a bitter taste, and are explosive by percussion or when heated. The potassium picrate requires 260 parts of water of 15°C . (59°F .), but only 14 parts of boiling water for solution.

Tests.—The above described properties are sufficient for recognizing the acid. When rapidly heated upon platinum foil, it takes fire and burns with a sooty flame, without leaving any fixed residue.

Preparation for Homœopathic Use.—One part by weight of pure picric acid is dissolved in ninety-nine parts by weight of distilled water.

Amount of drug power, $\frac{1}{100}$.Dilution must be prepared as directed under Class V— β .

Triturations of the pure picric acid are prepared as directed under Class VII.

ACIDUM SALICYLICUM.**Present Name,** Salicylic Acid.**Formula,** $\text{H}_2\text{C}_7\text{H}_4\text{O}_3$.**Molecular Weight,** 138.

Origin and Formation.—It occurs as methyl-salicylic ether in the leaves of *Gaultheria procumbens* and *Andromeda Leschenaultii*, and is formed from salicin, indigo, and some other organic matters by adding them to hydrate of potassium heated to fusion.

Preparation of Salicylic Acid.—It may be prepared from oil of wintergreen by heating it with strong solution of potassa as long as methylic alcohol is given off, and decomposing the resulting salicylate of potassium by hydrochloric acid. But it is at present extensively

prepared, according to Kolbe (1874), from carbolic acid. As the first step, dry carbolate of sodium is prepared, which is introduced into a retort; dry carbonic acid gas is passed through it, while heat is applied, gradually increased from 100° C. (212° F.) to 220° C. (428° F.), and not over 250° C. (464° F.). By this operation carbonic acid is made to enter into the molecule of phenol, producing salicylate of sodium and carbonate of sodium, while one-half of the carbolic acid distils over; $2(\text{NaC}_6\text{H}_5\text{O}) + \text{CO}_2$ yields $\text{Na}_2\text{C}_7\text{H}_4\text{O}_3 + \text{C}_6\text{H}_6\text{O}$. The residue in the retort is now dissolved in boiling water, filtered if necessary, and decomposed by muriatic acid, when, on cooling, impure salicylic acid having a brown or reddish-brown color is precipitated in the form of a crystalline powder; this reaction occurs as follows: $\text{Na}_2\text{C}_7\text{H}_4\text{O}_3 + 2\text{HCl} = 2\text{NaCl} + \text{H}_2\text{C}_7\text{H}_4\text{O}_3$ (salicylic acid), chloride of sodium remaining in solution. The impure acid thus obtained is further purified by dissolving it in boiling water or weak alcohol, treating the solution with animal charcoal, and crystalizing the filtrate after the addition of a little hydrochloric acid. A. Rautert recommends (1875) the purification of it by distillation with steam previously heated to 170° C. (338° F.), by which some black resin is left as a residue; by recrystallization from boiling water a little carbolic acid is removed. Contact with iron or with materials containing iron is to be avoided, since a reddish color is thereby imparted. According to Squibb (1877) it is best purified by subliming it with the aid of steam heat.

Properties.—Thus obtained, salicylic acid is in small acicular crystals—white, inodorous, and of a sweetish, acidulous, somewhat acrid taste. It fuses at 155° C. (311° F.), and if carefully heated sublimes unaltered. When rapidly heated to between 220° and 230° C. (428° and 446° F.), it is decomposed into carbonic acid gas and phenol; $\text{C}_7\text{H}_4\text{O}_3$ yields $\text{CO}_2 + \text{C}_6\text{H}_6\text{O}$. It is sparingly soluble in cold water, but dissolves freely in boiling water, crystallizing, when slowly cooled, in long, slender needles. It dissolves freely in wood spirit, alcohol, and ether, particularly when heated. The alcoholic solution evaporated spontaneously yields the acid in large oblique quadrangular prisms. The aqueous solution imparts a deep violet color to ferric chloride.

Tests.—According to J. Williams, 1878, salicylic acid, prepared by Kolbe's process, is contaminated with another acid, which he provisionally names *cresyl-salicylic acid*, and which remains in the mother liquor on neutralizing a solution in hot water with carbonate of calcium; if the precipitated salicylate of calcium be purified by recrystallization from boiling water and afterwards decomposed by hydrochloric acid, pure salicylic acid is obtained. The presence of carbolic acid can be detected by the lower fusing and boiling point, and by Plugge's test which is as follows: "When a liquid containing carbolic acid is boiled with a little solution of mercurous nitrate containing a trace of nitrous acid, a reduction of the mercurous salt occurs, and the liquid assumes, sooner or later, an intense red color." The aqueous solution, to which a little nitric acid has been added, is not precipitated by chloride of

barium (sulphuric acid), or by nitrate of silver (hydrochloric acid). Heated upon platinum foil, salicylic acid evaporates without leaving any residue (mineral impurities).

Preparation for Homœopathic Use.—The pure salicylic acid is prepared by trituration, as directed under Class VII.

ACIDUM SUCCINICUM.

Present Name, Succinic Acid.

Formula, $H_2 \cdot C_4 \cdot H_4 \cdot O_4$.

Molecular Weight, 118.

Origin.—Succinic Acid exists in amber, in different species of *Lactuca*, *Artemisia*, and other plants, and in many animal liquids. It is formed in the oxidation of wax, spermaceti, butyric, stearic, and some other fatty acids, of valerianic acid, benzoic acid, and other organic compounds; in the vinous fermentation of sugar; by the deoxidation or under the influence of casein as a ferment from asparagin, tartrates, malates, aconitates, fumarates, etc. It was observed by Agricola (1550), and recognized as an acid by Lemery (1675).

Preparation of Succinic Acid.—For medicinal use, succinic acid is prepared by the dry distillation of coarsely powdered amber, from a glass retort, which is entirely imbedded in sand, and the short neck of which is connected with a large receiver. The heat is gradually increased to about $280^{\circ} C.$ ($536^{\circ} F.$), and kept at this temperature as long as white vapors are evolved. The distillate consists of succinic acid crystallized in the neck of the retort, while the receiver contains oil of amber and an aqueous solution of acetic and succinic acids. On concentrating this solution, more succinic acid is obtained.

Properties.—The impure acid is in yellowish or brownish prismatic crystals, which have the odor of oil of amber and an acid empyreumatic taste. It fuses between 160° and $180^{\circ} C.$ (320° and $356^{\circ} F.$), dissolves in 2.2 parts of boiling and 28 parts of cold water, and is freely soluble in alcohol, slightly in ether, and insoluble in oil of turpentine. The pure acid is inodorous. With the alkalies and magnesia it forms salts which are readily soluble in water; the salts with most other metals are less freely or not at all soluble in water, but dissolve in solution of potassium acetate. The neutral solutions produce, with ferric chloride, red-brown precipitates.

Tests.—A concentrated aqueous solution of the acid does not produce a precipitate with potassium acetate (absence of tartaric acid), nor with chloride of barium (sulphuric acid), chloride of calcium (oxalic acid), sulphuretted hydrogen, nor after neutralization with sulphhydrate of ammonium (metals). When treated with soda in excess, an ammoniacal odor is not generated, and when heated upon platinum foil the odor of caramel is not observed (sugar), nor is there finally any fixed residue left (salts).

Preparation for Homœopathic Use.—The pure succinic acid is prepared by trituration, as directed under Class VII.

ACIDUM SULPHURICUM.

Present Name, Sulphuric Acid.

Common Names, Sulphuric Acid. Oil of Vitriol. Vitriolic Acid.

Formula, H_2SO_4 .

Molecular Weight, 98.

Sulphuric acid, of the specific gravity 1.843. It contains 96.8 per cent. by weight of the sulphuric acid, HO,SO_3 , and corresponds to 79 per cent of anhydrous sulphuric acid, SO_3 .

Origin.—Sulphuric acid is found in the free state in certain springs, emanating from volcanoes, and in the salivary glands of some mollusks; but it mostly occurs combined with various bases both in the mineral and organic kingdoms.

Preparation of Sulphuric Acid.—Sulphuric acid is obtained by burning sulphur, mixed with one-eighth of its weight of nitre, over a stratum of water contained in a chamber lined with sheet-lead. If the sulphur were burned by itself, the product would be sulphurous acid, which contains only two-thirds as much oxygen as sulphuric acid. The object of the nitre is to furnish, by its decomposition, the requisite additional quantity of oxygen. To understand the process, it is necessary to bear in mind that nitric acid contains five, sulphuric acid three, sulphurous acid two, nitric oxide two, nitrous acid three, and hyponitric acid four equivalents of oxygen, combined with one equivalent of their several radicals. One eq. of sulphur decomposes one eq. of nitric acid of the nitre, and becomes one eq. of sulphuric acid, which combines with the potassa of the nitre to form sulphate of potassium. In the mean time, the nitric acid, by furnishing three eqs. of oxygen to form the sulphuric acid, is converted into one eq. of nitric oxide, which is evolved. This gas, by combining with two eqs. of the oxygen of the air, immediately becomes hyponitric acid vapor, which diffuses itself throughout the leaden chamber. While these changes are taking place, the remainder of the sulphur is undergoing combustion, and filling the chamber with sulphurous acid gas. One eq. of hyponitric acid vapor, and one eq. of sulphurous acid gas, being thus intermingled in the chamber, react on each other, with the aid of moisture, so as to form a crystalline compound, consisting of one eq. of sulphuric acid and one eq. of nitrous acid, united with a portion of water. This compound falls into the water of the chamber, and is instantly decomposed. The sulphuric acid dissolves in the water, and the nitrous acid, resolved, at the moment of its extrication, into hyponitric acid and nitric oxide, escapes with effervescence. The hyponitric acid thus set free, and that reproduced by the nitric oxide uniting with the oxygen of the air, again react with sulphurous acid and humidity, and give rise to a second portion of the crystalline compound, which undergoes the same changes as the first. Thus, the nitric oxide performs the part of a carrier of oxygen from the air of the chamber to the sulphurous acid, converting the latter into sulphuric acid. The residue of the combustion of the sulphur and nitre, consisting of sulphate of potassium, is sold to the alum makers.

Purification of Sulphuric Acid.—The only way to obtain pure sulphuric acid is by distillation. Owing to the high boiling point of this acid, the operation is rather precarious, in consequence of the danger of the fracture of the retort from the sudden concussions to which this boiling acid gives rise. Dr. Ure recommends that a retort of the capacity of from two to four quarts be used in distilling a pint of acid. This is connected by means of a wide glass tube three or four feet long, with a receiver surrounded with cold water. All the vessels must be perfectly clean, and no luting employed. The retort is then gradually heated by a small furnace of charcoal, or, what is better, by means of a sand-bath, the retort being buried in the sand up to the neck. It is useful to put into the retort a few sharp-pointed pieces of glass, or slips of platinum foil, with the view of diminishing the shocks produced by the acid vapor. The distilled product ought not to be collected until a dense grayish white vapor is generated, the appearance of which is a sign that the pure concentrated acid is coming over. If this vapor should not appear, it shows that the acid subjected to distillation is not of full strength; and the distilled product, until this point is attained, will be an acid water. In the distillation of sulphuric acid, M. Lemberbert uses fragments of the mineral called quartzite, instead of pieces of glass or platinum foil. After a time the fragments get worn, and must be changed.

Properties.—Sulphuric acid (*sulphate of water*), commonly called *oil of vitriol*, is a dense, colorless, inodorous liquid, of an oily appearance, and strongly corrosive. On living tissues it acts as a powerful caustic. In the liquid form, it contains water, which is essential to its existence in that form. It unites with water in all proportions, and much heat is evolved on the mixture of the two fluids. When pure, and as highly concentrated as possible, as manufactured in leaden chambers, its sp. gr. is 1.845 (1.8485, Ure), a fluid ounce weighing a small fraction over 14 drachms. When of this sp. gr. it contains about 18 per cent of water. If its density exceed this, the presence of sulphate of lead or other impurity may be inferred. The commercial acid is seldom of full strength. According to Mr. Phillips, it has generally the sp. gr. 1.8433, and contains 22 per cent. of water; and this is about the strength of the Br. acid, of which the sp. gr. is stated to be 1.843. The strong acid boils at 620° F., and freezes at 15° F. below zero. When diluted, its boiling point is lowered. With salifiable bases it forms a numerous class of salts, called sulphates. It absorbs water with avidity, and is used as a desiccating agent. It has been ascertained by Professors W. B. and R. E. Rogers to be capable of absorbing 94 per cent. of carbonic acid gas, a fact having an important bearing on analytic operations.

Tests.—The most important impurities are arsenic, lead, and nitrogen oxides. The presence of arsenic is indicated by a yellow precipitate occurring in the diluted acid with sulphuretted hydrogen. It does not become turbid, and yields no black precipitate with sulphuretted hydrogen, when diluted with six times its volume of distilled water, showing the absence of lead. A cold concentrated solution of ferrous sulphate poured upon the surface of the concentrated acid does not develope

a purple color where the two liquids unite, showing the absence of nitrogen oxides. Saline additions, sometimes made to increase the specific gravity of weaker acids, are recognized by the fixed residue left on evaporating a small quantity from a platinum dish or crucible. For the detection of sulphurous acid, Warington recommends (1868) the suspension in a quart bottle, half filled with the sulphuric acid, of a strip of paper colored blue by iodide of starch, which will be bleached by the sulphurous acid; a paper covered with starch and iodide of potassium, suspended in a similar manner, becomes blue in the presence of nitrogen oxides. Arsenic is found principally in sulphuric acid manufactured from pyrites, more rarely if made from sulphur.

Preparation for Homœopathic Use.—One part by weight of pure sulphuric acid, sp. gr. 1.843, is dissolved in nine parts by weight of distilled water.

Amount of drug power, γ_{15}^1 .

Dilutions must be prepared as directed under Class V—*a*.

ACIDUM TANNICUM.

Synonyms, Acidum Gallo-Tannicum. Tannin. Gallo-Tannic Acid.

Present Name, Tannic Acid.

Formula, $C_{14}H_{10}O_9$.

Molecular Weight, 322.

Origin and Varieties.—Compounds having acid properties and an astringent taste, producing dark-colored solution or precipitates with salts of iron and precipitating gelatin and albumen from their solutions, are called by the generic name of tannins. They are conveniently arranged into two groups, according to the color produced with ferric salts, which is either dark green or dark blue. A large number of plants contain tannin of the latter group, differing, however, from the officinal tannic acid in not furnishing gallic or pyrogallic acid. The tannin obtained from nutgalls is, for this reason, distinguished from the others by the prefix gallo. Gallo-tannic acid has been found in the officinal galls, in Chinese and Japanese galls, in the cups of the fruit of some oaks, and in the leaves of Italian sumach, *Rhus Coriaria*, *Linn.*

Preparation of Gallo-Tannic Acid.—Take nutgall in fine powder, and ether, of each a sufficient quantity. Expose the nutgall to a damp atmosphere for twenty-four hours, and then mix it with sufficient ether, previously washed with water, to form a soft paste. Set this aside, covered closely, for six hours; then having quickly enveloped it in a close canvas cloth, express it powerfully between tinned plates, so as to obtain the liquid portion. Reduce the resulting cake to powder, and mix it with sufficient ether, shaken with one-sixteenth of its bulk of water, to form again a soft paste, and express as before. Mix the liquids, and allow the mixture to evaporate spontaneously until it assumes a syrupy consistence; then spread it on glass or tinned plates, and dry it quickly in a drying closet. Lastly, remove the residue from the plates, with a spatula, and keep it in a well-stoppered bottle.

Properties.—Tannic acid, thus prepared, has a yellowish-white color, frequently of a slight greenish tint. It has a strongly astringent taste, and is freely soluble in water, alcohol, and in six parts of glycerin, but remains pulverulent when in contact with anhydrous ether, which is free from alcohol. The solutions have an acid reaction. The aqueous solution is precipitated by mineral and some organic acids, tannin being less soluble in acidulated than in pure water. It yields precipitates with the alkaloids and many so-called neutral principles, with lime-water, most metallic salts, starch, albumen, and gelatin. With solutions of ferric salts a bluish-black precipitate occurs, with a reduction to ferrous compounds. In the presence of alkalies, and in contact with air, solutions of tannin rapidly assume a brown color. On the application of heat, tannic acid is decomposed, and pyrogallie acid sublimates at 215° C. (419° F.), leaving metagallie acid behind, which is finally consumed without leaving any residue.

Composition.—The impossibility of obtaining tannic acid in the crystallized state has rendered the determination of its composition very difficult. The latest investigations on the subject appear to furnish conclusive proof that chemically pure tannin must be viewed as an anhydrid of gallic acid, and that one molecule of it represents two molecules of the latter, minus one of water. If this be the correct view, tannin must be regarded as *digallie acid*, and its relation to gallic acid will be analogous to the relations of the sulphuric, nitric, and phosphoric anhydrids to their respective hydrogen compounds. The formula of tannic acid will then be $(C_7 H_6 O_5)_2 - H_2O = (C_{14} H_{10} O_9)$, which is the formula of Mulder (1848).

Tests.—Tannic acid should burn from platinum foil without leaving any residue (mineral impurities), and be completely soluble in strong alcohol (dextrin insoluble) and in warm water (resin insoluble).

Preparation for Homœopathic Use.—The pure tannic acid is prepared by trituration, as directed under Class VII.

ACIDUM TARTARICUM.

Present Name, Tartaric Acid.

Formula, $H_2 C_4 H_4 O_6$.

Molecular Weight, 150.

Origin.—It is met with either free or in combination with bases in grapes, sumach-berries, tamarinds, pineapples and other acidulous fruits; also in other parts of many plants.

Preparation of Tartaric Acid.—"Take of acid tartrate of potassium forty-five ounces (avoirdupois); distilled water a sufficiency; prepared chalk twelve ounces and a half (avoird.); chloride of calcium, thirteen ounces and a half (avoird.); sulphuric acid thirteen fluid ounces. Boil the acid tartrate of potash with two gallons (imperial measure) of the water, and add gradually the chalk, constantly stirring. When the effervescence has ceased, add the chloride of calcium dissolved in two pints (imp. meas.) of the water. When the tartrate of lime has subsided pour off the liquid, and wash the tartrate with distilled water until it is rendered tasteless. Pour the sul-

phuric acid, first diluted with three pints (imp. meas.) of the water on the tartrate of lime; mix thoroughly, boil for half an hour with repeated stirring, and filter through calico. Evaporate the filtrate at a gentle heat until it acquires the sp. gr. of 1.21, allow it to cool, and then separate and reject the crystals of sulphate of lime which have formed. Again evaporate the clear liquor till a film forms on its surface, and allow it to cool and crystallize. Lastly, purify the crystals by solution, filtration (if necessary) and recrystallization."

Properties.—Tartaric acid crystallizes in colorless, oblique, rhombic prisms or tables, which are inodorous, and have a strong but agreeably acid taste. They are soluble in a little less than their own weight of water, and dissolve freely in alcohol and wood spirit, but are insoluble in ether. In American commerce, tartaric acid is usually found in a state of powder. It is a strong bibasic acid, and many of its salts crystallize readily. The aqueous solutions of tartaric acid and of its salts deviate the plane of polarized light to the right; hence the name of *dextrotartaric acid*.

Tests—Tartaric acid, heated upon platinum foil, is decomposed and is finally consumed without leaving any residue (mineral impurities). It dissolves completely in about six parts of alcohol, some salts, if present, being left behind. Its solution in water is not precipitated or colored dark by hydrosulphuric acid (lead, copper, etc.), and is not precipitated by chloride of barium (sulphuric acid); the solution neutralized by ammonia and acidulated by acetic acid is not precipitated by chloride of calcium (oxalic acid) or by oxalate of ammonium (calcium salts). 75 grains of tartaric acid dissolved in water require for neutralization 1,000 grain-measures of the volumetric solution of soda. (Br.) If adulterated, a smaller quantity of the solution will be required for neutralization.

Preparation for Homœopathic Use.—The pure tartaric acid is prepared by trituration as directed under Class VII.

ACIDUM URICUM.

Synonym, Lithic Acid.

Present Name, Uric Acid.

Formula, $C_5 N_4 H_4 O_3$.

Origin.—This acid is a product of the animal organism, and has never been formed by artificial means.

Preparation of Uric Acid.—It may be prepared from human urine by concentration and addition of hydrochloric acid, and crystallizes out after some time in the form of small, reddish, translucent grains, very difficult to purify. A much preferable method is, to employ the solid white excrement of serpents, which can be easily procured; this consists almost entirely of uric acid and ammonium urate. It is reduced to powder, and boiled in dilute solution of caustic potash; the liquid, filtered from the insignificant residue of feculent matter and earthy phosphates, is mixed with excess of hydrochloric acid, boiled for a few minutes, and left to cool. The product is collected on a filter, washed until free from potassium chloride, and dried by gentle heat.

Properties.—Uric acid, thus obtained, forms a glistening, snow-white powder, tasteless, inodorous, and very sparingly soluble. It is seen under the microscope to consist of minute, but regular crystals. It dissolves in concentrated sulphuric acid without apparent decomposition, and is precipitated by dilution with water. By destructive distillation, uric acid yields cyanic acid, hydrocyanic acid, carbon dioxide, ammonium carbonate, and a black coaly residue, rich in nitrogen. By fusion with potassium hydrate, it yields potassium carbonate, cyanate, and cyanide. Uric acid is remarkable for the facility with which it is altered by oxidizing agents, and the great number of definite and crystallizable compounds obtained in this manner, or by treating the immediate products of oxidation with acids, alkalies, reducing agents, etc.

Tests.—Uric acid is perfectly well characterized, even when in very small quantity, by its behavior with nitric acid. A small portion mixed with a drop or two of nitric acid in a small porcelain capsule dissolves with copious effervescence. When this solution is cautiously evaporated nearly to dryness, and, after the addition of a little water, mixed with a slight excess of ammonia, a deep red tint of murexide is immediately produced.

Preparation for Homœopathic Use.—The pure uric acid is prepared by trituration, as directed under Class VII.

ACONITINUM.

Synonyms, Aconitia. Aconitina. Aconitine.

Formula, $C_{33}H_{43}NO_{12}$.

Molecular Weight, 645.

Preparation of Aconitia.—Take of aconite root in moderately fine powder forty-eight troy ounces; diluted sulphuric acid a fluid ounce and a half; alcohol, stronger water of ammonia, stronger ether, distilled water, each, a sufficient quantity. Digest the powder in eight pints of alcohol, in a close vessel, at the temperature of 120° F., for twenty-four hours. Introduce the mixture into a cylindrical percolator, and gradually pour alcohol upon it until twenty-four pints of liquid have slowly passed. Distil off the alcohol from the filtered liquid until this is reduced to the measure of a pint. Then add to the concentrated liquid a pint of distilled water, to which has been added the diluted sulphuric acid, and mix thoroughly. Remove from the liquid the fixed oil and resin, which separate on standing, and evaporate to four fluid ounces. When the liquid has cooled, pour it into a glass-stoppered pint bottle, and wash it, by agitation and decantation, with six fluid ounces of stronger ether, to remove the remainder of the fixed oil and resin. Now add stronger water of ammonia until, after agitation, it remains in slight excess. Next, treat the resulting mixture with six fluid ounces of stronger ether, and, having closed the bottle, agitate briskly for a few minutes. Allow the liquid to stand until it separates into two layers, the lighter being an ethereal solution of aconitia. Decant this carefully, and treat what remains, twice successively, with the same quantity of stronger ether, decanting each time as before. Mix

the several ethereal solutions in a porcelain capsule, and allow the mixture to evaporate spontaneously to dryness. Lastly, reduce the dry residue to powder, and keep it in a well-stopped bottle.

Purification of Aconitia.—The impure aconitia thus obtained is dissolved in warm distilled water acidulated with sulphuric acid, and the solution, when cold, is precipitated by the cautious addition of ammonia diluted with four times its bulk of distilled water; the precipitate is washed on a filter with a small quantity of cold distilled water, and dried by slight pressure between folds of filtering paper.

Properties.—Aconitia is a white amorphous powder. Pure aconitia gives no characteristic color reactions with acids or oxidizing agents. It has a bitter, acrid taste, accompanied by a sense of numbness, is insoluble in petroleum, benzine (Dragendorff), soluble in 150 parts of cold and 50 of boiling water, and in much less alcohol, ether, benzol, and chloroform. It melts with heat and burns with a smoky flame, leaving no residue when burned with free access of air. It has a strong alkaline reaction and neutralizes acids, from which solutions it is precipitated by caustic alkalies, but not by carbonate of ammonium or by bicarbonate of sodium. Sulphuric acid produces with it a brown color.

Tests.—The purity of officinal aconitia is proven by above reactions. Pseudo aconitia may be distinguished from it by requiring about 230 parts of chloroform, 100 parts of boiling ether, and 1500 to 2600 parts of diluted ammonia of 14 per cent. strength, for solution.

Preparation for Homœopathic Use.—Pure aconitia is prepared by trituration, as directed under Class VII.

ACONITUM.

Synonym, Aconitum Napellus, *Linn.*

Nat. Ord., Ranunculaceæ.

Common Names, Monkshood. Wolfsbane. Aconite.

The genus Monkshood is spread all over Europe, either growing spontaneously in the mountain districts, or cultivated in gardens for decoration. Though all species possess more or less narcotic powers, it is, notwithstanding, by no means indifferent from which we draw our exceedingly important medicine. Experience has declared itself for the above stated species and *exclusively* for the plant *growing wild*, which is indigenous to the Swiss, Carinthian and Styrian Alps, the Pyrenees, the Dauphiny, the mountains of Silesia, Bavaria, and the Hartz. It is a perennial herbaceous plant, with a spindle-shaped, tapering root, seldom exceeding at the top the thickness of the finger, three or four inches or more in length, brownish externally, whitish and fleshy within, and sending forth numerous long, thick, fleshy fibres. When the plant is in full growth, there are usually two roots joined together, of which the older is dark-brown, and supports the stem, while the younger is of a light yellowish-brown, and is destined to furnish the stem of the following year, the old root decaying. The stem, two to three feet high, is erect, roundish-angulate, only above a little covered with slender hairs (pilose); the leaves are long-petiolate, five-lobed, divided to the base, the lobes again deeply cleft, cuneiform, above shining dark

green, below light green. Flowers standing at the end in loose racemes, on long expanding pedicels, dark violet, the hood wide, semiglobulous with short blunt spur. The three- or five-partite capsulæ stand spread from each other.

Preparation.—In the flowering time, June and July, the entire plant, except the root, is chopped and pounded to a pulp and pressed out *lege artis* in a piece of new linen. The expressed juice is then, by brisk agitation, mingled with an equal part by weight of alcohol, and the mixture is poured into a well-stoppered bottle and allowed to stand 8 days in a dark, cool place, and then filtered. It is also recommended to prepare a tincture according to Class II.

Drug power of tincture, $\frac{1}{2}$.

Dilutions are prepared as directed under Classes I and II.

ACONITUM CAMMARUM, Jacquin.

Synonym, *Aconitum Variegatum, Linn.*

Nat. Ord., Ranunculaceæ.

This is a species of aconite found growing in the same localities as the *aconitum napellus*.

Preparation.—The fresh root is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, and having poured it into a well-stoppered bottle it is allowed to stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{3}$.

Dilutions must be prepared as directed under Class III.

ACONITUM FEROX, Wallich.

Nat. Ord., Ranunculaceæ.

This is the most poisonous species of aconite known; it is found growing on the Himalaya mountains, the roots supplying the famous Indian (Nipal) poison called Bikh, Bish, or Nabee. This species is considered by *Hooker* and *Thompson* as a variety of *Aconitum napellus*.

Preparation.—The root is finely powdered and covered with five parts by weight of alcohol, and having poured it into a well-stoppered bottle, it is allowed to stand eight days in a dark, cool place, shaking it twice a day. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{10}$.

Dilutions must be prepared as directed under Class IV.

ACONITUM LYCOCTONUM, Linn.

Nat. Ord., Ranunculaceæ.

This is a species of aconite found growing in the same localities as the *aconitum napellus*.

Preparation.—The fresh herb, gathered when coming into bloom, is chopped and pounded to a pulp, and pressed out *lege artis* in a piece of new linen. The expressed juice is then, by brisk agitation, mingled with an equal part by weight of alcohol. This mixture having been poured into a well-stoppered bottle is allowed to stand eight days in a dark, cool place and then filtered.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class I.

ACONITUM RADIX.

Root of Aconitum Napellus.

Preparation.—The fresh root of the uncultivated plant is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and after mixing the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, and having poured it into a well-stoppered bottle, it is allowed to stand 8 days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

ACTÆA.

Synonym, Actæa Spicata, *Linn.*

Nat. Ord., Ranunculaceæ.

Common Names, Common herb Christopher. Bane-berry.

This elegant perennial herb, growing from one to two feet high, is found all over Germany, though not frequently; it likes a stony ground in mountain forests and shady humid woods.

On naked, smooth, stiff, above ramose geniculated stems stand the petiolate, ternate-manifold compounded leaves, with ovate-cordate, serrato-dentated incised leaflets. The white flowers with caducous petals, appear in loose racemes, on long peduncles, growing out of the axils. The fruit is a smooth berry, subovate, and shining black, when ripe. The perennial root forms a strong ramose-fibrous stock of dark brown, when dried, black color; the fine ramifying rootlets running out long, show in the crosscut a stellate quadri-partite medullary substance.

Preparation.—The fresh root, gathered in May before the plant is in flower, is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, and having poured it into a well-stoppered bottle, it is allowed to stand 8 days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

ADAMAS.**Common Name,** Diamond.

Pure Carbon in a crystallized state.

Origin.—The diamond is one of the most remarkable substances known; long prized on account of its brilliancy as an ornamental gem, the discovery of its curious chemical nature confers upon it a high degree of scientific interest. Several localities in India, the island of Borneo, and more especially Brazil, furnish this beautiful substance. The origin and true geological position of the diamond are unknown; it is always found embedded in gravel and transported materials whose history cannot be traced.

Properties.—The diamond is always distinctly crystallized, often quite transparent and colorless, but now and then having a shade of yellow, pink, or blue. The crystalline form of the diamond is that of the regular octohedron or cube, or some figure geometrically connected with these. Many of the octohedral crystals exhibit a very peculiar appearance, arising from the surfaces being curved or rounded, which gives to the crystals an almost spherical figure. The diamond is infusible and unalterable even by a very intense heat, provided air be excluded; but when heated, thus protected, between the poles of a strong galvanic battery, it is converted into coke or graphite; heated to whiteness in a vessel of oxygen, it burns with facility, yielding carbonic acid gas.

The diamond is the hardest substance known; it admits of being split or cloven without difficulty in certain particular directions, but can only be cut or abraded by a second portion of the same material; the powder rubbed off in this process serves for polishing the new faces, and is also highly useful to the lapidary and seal-engraver. The diamond is also made use of by the glazier in cutting glass. The diamond is carbon in its crystallized state; its sp. gr. is 3.5; when burned it usually leaves between 0.05 and 0.02 per cent. ashes.

Preparation for Homœopathic Use.—The diamond, in fine powder, is prepared by trituration, as directed under Class VII. It is recommended that sugar of milk be crystallized into the form of a mortar and pestle and the diamond triturated therein.

ADELHEIDSQUELLE.

Mineral spring at Heilbrunn, contains among other substances, iodine, bromine, alumina, soda, etc.

Analysis (*Pettenkofer*).

Sod. Iod.,	.022	Carbonate of Soda,	.216	Free Carb. gas,	13.18 c.c.
" Brom.,	.367	" Lime,	.584	Carburetted H.,	8.02
" Chlor.,	38.068	" Magn.,	.144	Oxygen,	1.38
" Sulph.,	.048	" Iron,	.072	Nitrogen,	6.54
Potass. Chlor.,	.020	Alumina,	.142		
		Silica,	.147		
		Organic,	.165		

Preparation.—Never proven in potencies, but if required, prepare 1 and 2 dilutions with distilled water, 3 and higher potencies with alcohol.

ÆSCULUS GLABRA, Willd.

Synonyms, *Æ. Carneæ*. *Æ. Ohioensis*. *Pavia Glabra*.

Nat. Ord., Sapindaceæ.

Common Names, Fetid or Ohio Buckeye. Buckeye tree.

This is a large tree, growing abundantly in rich alluvial lands of Ohio, and other States watered by the Ohio river. The bark exhales an unpleasant odor, as in the rest of the genus. Leaves opposite, pointing out. Leaflets fine, with a serrate or toothed edge, and straight veins, like a chestnut leaf. Flowers small, not showy; stamens curved, much longer than the corolla, which is of a pale yellow, and consists of four upright petals. Fruit prickly when young. The fruit is said to be actively poisonous, producing symptoms analogous to those caused by strychnia.

Preparation.—The fresh hulled nut is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and after thoroughly mixing the pulp with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, and having poured it into a well-stoppered bottle, it is allowed to stand 8 days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{6}$.

Dilutions must be prepared as directed under Class III.

Triturations are prepared from the whole dried fruit, as directed under Class VII.

ÆSCULUS HIPPOCASTANUM, Linn.

Synonym, *Hippocastanum vulgare*.

Nat. Ord., Sapindaceæ.

Common Name, Horse Chestnut.

The horse chestnut is a native of Asia, and was introduced about the middle of the sixteenth century into Europe, where, as well as in this country, it is now extensively cultivated as an ornamental tree. Leaves opposite, digitate; leaflets serrate, straight veined. Flowers in a terminal thyrsus or dense panicle, often polygamous, the greater portion with imperfect pistils and sterile. Pedicels jointed. Corolla spreading, white spotted with purple and yellow, of five petals. Stamens declined; leaflets seven. Its nuts are ovoid, mahogany-colored, perfectly smooth and shining, with a large oval hilum, which is paler colored and rough.

Preparation.—The ripe, fresh, hulled nut is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, and having poured it into a well-stoppered bottle, it is allowed to stand 8 days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{6}$.

Dilutions must be prepared as directed under Class III.

ÆTHUSA.**Synonym,** *Æthusa Cynapium*, *Linn.***Nat. Ord.,** Umbelliferae.**Common Names,** Fool's Parsley. Dog Parsley. Dog Poison. Garden Hemlock. Lesser Hemlock.

This is a common weed, abundant throughout Europe, growing about a foot high, strongly resembling parsley in appearance, yet easily distinguished from it by its nauseous smell when rubbed, and loathsome taste. Root spindle-shaped; stem erect and quite smooth, hollow, and sometimes violet striped; dark green, on the lower base lighter colored, very vivid shining, ternate-pinnate cleft leaves. The umbels are opposite-leaved, long-petiolate, without an involucre, with ten to twenty very unequal rays; petals white, the exterior ones of the marginal flowers twice as big as those of the inner ones. Seeds globular and striated.

Preparation.—The whole fresh plant, when in flower, is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, and having poured it into a well-stoppered bottle, it is allowed to stand 8 days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{6}$.

Dilutions must be prepared as directed under Class III.

AGARICUS EMETICUS.**Synonym,** *Russula Emetica*.**Nat. Ord.,** Fungi.**Common Name,** Common Mushroom.

Mushrooms are very largely cultivated in Europe for the table. Their substance is made up of cellular tissue, which is usually of that soft consistence denominated fungous, but is sometimes corky, ligneous, or even gelatinous. Many of them have an agreeable odor and taste, while others are unpleasant and offensive both to the nostrils and palate.

Preparation.—The fresh mushroom is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, and having poured it into a well-stoppered bottle, it is allowed to stand 8 days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{6}$.

Dilutions must be prepared as directed under Class III.

AGARICUS MUSCARIUS, Linn.**Synonym,** *Amanita muscarius*.**Nat. Ord.,** Fungi.**Common Names,** Toadstool. Bug Agaric. Fly Agaric.

This poisonous fungus grows, from August to October, in Europe, Asia, and America, and is found in dry pine and birch forests. Upon first coming out of the ground, it is oval and enclosed in a soft, fleshy envelope; the young stem is short and thick, bulbous at the base, generally hollow when old, from four to six inches long, the part above the middle being provided with a white membranous ring; the cap is at first eminently vaulted, afterwards it becomes flatter, is of a scarlet-red, furnished with yellowish-white scales which are sometimes wanting, with a white border, or a border with brown-yellow stripes; pulp yellowish, or white, or reddish, the lamellæ radiate from the middle to the margin; it has an offensive smell and a burning acrid taste.

Preparation.—Select the younger specimens, which have convex cap, not yet hollow stem, and clean them from adherent earth by scraping; peel off the epidermis from the stem and cap, and then bruise the whole into a pulp and weigh. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, and having poured it into a well-stoppered bottle, it is allowed to stand 8 days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{4}$.

Dilutions must be prepared as directed under Class III.

AGAVE AMERICANA, Linn.**Nat. Ord.,** Amaryllidaceæ.**Common Names,** American Aloë. Maguey. Century Plant.

The plant is indigenous to the tropical portion of America, has been introduced and naturalized in southern Florida, and is frequently met with in cultivation in all parts of the globe, and to some extent naturalized in the warmer portions thereof. The leaves are all radical, curving backwards, about six feet long, thick and fleshy, lanceolate in shape, and at the apex and margins armed with sharp spines. The plant flowers in its native localities, usually in about ten years, but attains a considerable age before flowering in temperate climates, hence the name century plant; the rapidly growing flowering scape reaches a height of thirty to forty feet. This and other species of *Agave* bear a considerable resemblance, in appearance, to the plants of the genus *Aloë*, with which they are sometimes confounded.

Preparation.—The fresh leaves are chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, and having poured it into a well-stoppered bottle, it is allowed to stand 8 days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{4}$.

Dilutions must be prepared as directed under Class III.

AGNUS CASTUS.

Synonym, *Vitex Agnus Castus*, *Linn.*

Nat. Ord., Verbenaceæ.

Common Name, Chaste Tree.

This is a shrub growing wild in the south of Europe, on the shores of the Mediterranean; on sandy spots and at the foot of rocks. It is from three to five feet high, and much branched. Leaves opposite, petiolate, digitate, five to seven partite; color dark green on upper, greyish on under surface, with a very strong smell. Flowers numerous, blue or purple, in long terminal spikes. Berries somewhat like a peppercorn.

Preparation.—The fresh, ripe berries, are pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one sixth part of it, the rest of the alcohol is added. After having stirred the whole well, and having poured it into a well-stoppered bottle, it is allowed to stand 8 days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{4}$.

Dilutions must be prepared as directed under Class III.

AGROSTEMMA GITHAGO, *Linn.*

Synonym, *Lychnis Githago*, *Lamarck.*

Nat. Ord., Caryophyllaceæ.

Common Name, Corn Cockle.

This is a common weed, indigenous to Europe, growing in wheat-fields, where the black seeds of cockle are injurious to the appearance of the flour in the wheat. It is an annual, clothed with long soft appressed hairs; flowers long-peduncled; calyx lobes similar to the long and linear leaves, surpassing the broad and crownless purple-red petals, falling off in fruit.

Preparation.—The ripe, dried seeds, are finely powdered and weighed. Then five parts by weight of alcohol are poured over it, and it is allowed to stand 8 days in a well-stoppered bottle, in a dark, cool place, shaking it twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{16}$.

Dilutions must be prepared as directed under Class IV.

AILANTHUS GLANDULOSA, *Desfontaines.*

Synonym, *Rhus Chinense.*

Nat. Ord., Xanthoxylaceæ.

Common Names, The Tree of Heaven. Chinese Sumach.

This tree is a native of China, but is well known in the United

States, where it has within a few years been extensively cultivated as a shade tree, for which purpose it would be admirably adapted by its rapid growth and abundant foliage, as well as by its exemption from the attacks of insects, were it not for the offensive odor emitted by it in its flowering period. In its general aspect and the character of its foliage, it appears like a gigantic sumach. It grows to a height of 60 feet and upwards. Its flowers are of a whitish-green color.

Preparation.—Equal parts of the fresh shoots, leaves, blossoms, and the young bark, are chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one sixth part of it, the rest of the alcohol is added. After having stirred the whole well, and having poured it into a well-stoppered bottle, it is allowed to stand 8 days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{8}$.

Dilutions must be prepared as directed under Class III.

ALETRIN.

Resinoid of Aletris Farinosa.

Preparation.—The resinoid, as obtained from the chemist, is prepared by trituration as directed under Class VII.

ALETRIS FARINOSA, Linn.

Synonym, Aletris Alba.

Nat. Ord., Hemodoraceæ.

Common Names, Star Grass. Blazing Grass. Colic Root. Unicorn Root.

This is an indigenous perennial plant, the leaves of which spring immediately from the root, and spread on the ground in the form of a star. The leaves are sessile, lanceolate, entire, pointed, very smooth, longitudinally veined, and of unequal size, the largest being about four inches in length. From the midst of them a flower-stem rises, one or two feet in height, nearly naked, with remote scales, which sometimes become leaves. It terminates in a slender scattered spike, the flowers of which stand on very short pedicels, and have minute bracts at the base. The calyx is wanting. The corolla is tubular, oblong, divided at the summit into six spreading segments, of a white color, and when old, of a mealy or rugose appearance on the outside. The plant is found in almost all parts of the United States, growing in fields and about the borders of woods, and flowering in June and July.

Preparation.—The fresh bulb is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having thoroughly mixed the pulp with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, and having poured it into a well-stoppered bottle, it is allowed to stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{8}$.

Dilutions must be prepared as directed under Class III.

ALISMA PLANTAGO, *Linn.*

Synonym, *Alisma Parviflora*.

Nat. Ord., Alismaceæ.

Common Name, Water Plantain.

This is an herbaceous plant, common to Europe and the United States, and growing in streams, pools, ditches, and other standing water. Root perennial, leaves long-petioled, ovate, oblong, or lanceolate, pointed, mostly rounded or heart-shaped at the base, three to nine nerved; panicle loose, compound, many-flowered, from one to two feet long; carpels obliquely obovate, forming an obtusely triangular whorl in fruit. The root when fresh has an odor like that of Florentine orris, but loses it when dried. Its taste is acrid and nauseous.

Preparation.—The fresh root is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, and having poured it into a well-stoppered bottle, it is allowed to stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{8}$.

Dilutions must be prepared as directed under Class III.

ALLIUM SATIVUM, *Linn.*

Nat. Ord., Liliaceæ.

Common Name, Garlic.

This is a perennial bulbous plant. The bulbs are numerous, and enclosed in a common membranous covering, from the base of which the fibres that constitute the proper root descend. The stem is simple, and rises about two feet. The leaves are long, flat and grass-like, and sheathe the lower half of the stem. At the termination of the stem is a cluster of flowers and bulbs mingled together, and enclosed in a pointed spathe, which opens on one side and withers. The flowers are small and white, and make their appearance in July. This species of garlic grows wild in Sicily, Italy and the south of France, and is cultivated in all civilized countries.

Preparation.—The fresh bulbs, gathered from June to August, and freed from their membranes, are chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and after thoroughly mixing the pulp with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, and having poured it into a well-stoppered bottle, it is allowed to stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{8}$.

Dilutions must be prepared as directed under Class III.

ALNUS RUBRA.**Synonym,** *Alnus serrulata*.**Nat. Ord.,** Betulaceæ.**Common Names,** Red Alder. Tag Alder. Notch-leaved Alder.

This is the *Alnus Serrulata* of Willdenow. It is an indigenous shrub, growing in clumps on the borders of ponds and rivers, and in swamps. Its stems are numerous, from six to twelve feet high. Leaves ob-ovate, acute at the base, sharply serrate with minute teeth, thickish, green both sides, smooth, or often downy beneath; flowers, which appear in April before the development of the leaves, are of a reddish-green color; stipules oval; fruit ovate. Its cones remain on the bush all winter.

Preparation.—The fresh bark is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, and having poured it into a well-stoppered bottle, it is allowed to stand 8 days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{4}$.

Dilutions must be prepared as directed under Class III.

ALOE.**Synonym,** Aloe Socotrina, *Lamarck*.**Nat. Ord.,** Liliacæ.**Common Names,** Aloes. Socotrine Aloes.

The stem of this species is erect, eighteen inches or more in height, woody, and leafless below, where it is very rough from the remains of former leaves. At the top it is embraced by green, sword-shaped, ascending leaves, somewhat concave on their upper surface, convex beneath, curved inward at the point, with numerous small white serratures at their edges. The flowers, which are in a cylindrical, simple raceme, are scarlet near the base, pale in the centre, and greenish at the summit, and have unequal stamens, of which three are longer than the corolla. The plant received its name from the island of Socotra, of which it is said to be a native.

Preparation.—The inspissated juice is finely pulverized and covered with five parts by weight of alcohol. Having poured it into a well-stoppered bottle it is allowed to stand 8 days in a dark, cool place, shaking it twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{16}$.

Dilutions must be prepared as directed under Class IV.

Triturations are prepared from the inspissated juice, as directed under Class VII.

ALSTONIA SCHOLARIS.**Synonym,** *Echites Scholaris*.**Nat. Ord.,** Apocynaceæ.**Common Names,** Devil Tree. Pali-mara. Satween.

This is a large tree, growing in India and Malabar, the concrete juice of which is a possible substitute for gutta-percha. The bark known in commerce by the same name comes in pieces from three to six inches long, and over a quarter of an inch thick. These are firm in texture, flat or curved, brown in color, easily powdered, and bitter to the taste.

Preparation.—The bark, finely powdered, is covered with five parts by weight of alcohol, and having been poured into a well-stoppered bottle, it is allowed to stand 14 days in a dark place, shaking it twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{16}$.

Dilutions must be prepared as directed under Class IV.

ALTHÆA.**Synonym,** *Althæa Officinalis*, *Linn.***Nat. Ord.,** Malvaceæ.**Common Name,** Marshmallow.

This is an herbaceous perennial, with a perpendicular branching root, and erect woolly stems, from two to four feet or more in height, branched and leafy towards the summit. The leaves are alternate, petiolate, nearly cordate on the lower part of the stem, oblong-ovate and obscurely three-lobed above, somewhat angular, irregularly serrate, pointed, and covered on both sides with a soft down. The flowers are terminal and axillary, with short peduncles, each bearing one, two, or three flowers. The corolla has five spreading, obcordate petals, of a pale-purplish color. The fruit consists of numerous capsules united in a compact circular form, each containing a single seed.

The plant grows throughout Europe, inhabiting salt marshes, the banks of rivers, and other moist places. It is found also in this country on the borders of salt marshes.

Preparation.—The fresh root, collected in autumn from plants at least two years old, is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and after thoroughly mixing the pulp with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, and having poured it into a well-stoppered bottle, it is allowed to stand 8 days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{8}$.

Dilutions must be prepared as directed under Class III.

ALUMEN.

Synonyms, Alumen crudum. Potassa Alum.

Common Names, Alum. Sulphate of Aluminium and Potassium.

Present Name, Potassio-aluminic Sulphate.

Formula, $K_2 Al_2 4SO_4, 24H_2 O$.

Molecular Weight, 949.

Alums are compound sulphates, readily crystallizing in cubes and octohedrons of the regular system, and containing 24 molecules of water of crystallization, and two atoms each of a univalent and trivalent basylous radical. The most important trivalent radicals which are capable of forming alums are aluminium, chromium, and iron, and the univalent radicals potassium, sodium, and ammonium. Ordinarily the name *alum* is indiscriminately used for the aluminio-ammonium and for the aluminio-potassium alum, the latter being the one recognized by our school.

Preparation of Potassa Alum.—When calcined clay containing but little iron (pipe clay) is treated with sulphuric acid until a pasty mass is obtained, this, on exposure to the air, will be gradually converted into sulphate of aluminium, which needs merely to be mixed, while in solution, with potassium sulphate to obtain crystals of alum. Previous to calcination, the clay is often mixed with 12 to 15 per cent. of charcoal or coke, after which the combination with the sulphuric acid is more readily effected. Alum is freed from the iron it contains by repeated solution, filtering and recrystallization, till reagents test its purity.

Properties.—Alum crystallizes in colorless transparent regular octohedrons, which are usually combined with the cube. It has an acid, sweetish, and astringent taste, and a strongly acid reaction to test paper. Its aqueous solution dissolves iron and other metals which are soluble in diluted sulphuric acid. It is soluble in alcohol, effloresces slightly on exposure to the air; when heated to about 93° C. (199° F.), it fuses in its water of crystallization, and after this has evaporated at a higher heat, solidifies again (alumen exsiccatum); when heated to redness, it is decomposed, leaving a mixture of alumina and sulphate of potassium.

Tests.—The alkalies and alkaline carbonates precipitate white gelatinous hydrate of aluminium, which is insoluble in ammonia and the carbonated alkalies, but dissolves in caustic soda and potassa. Commercial alum always contains iron, from which it is freed by recrystallization. It is owing to its presence that solutions of alum become blue on the addition of ferrocyanide of potassium, and yield a grayish precipitate with sulphydrate of ammonium. The solution of alum in caustic potassa yields a slight black precipitate with sulphuretted hydrogen or sulphydrate of ammonium (iron), but not a white one with the same reagents (zinc).

Preparation for Homœopathic Use.—The pure potassa alum is prepared by trituration, as directed under Class VII.

ALUMINA.

Synonyms, Aluminium Oxydatum. Argilla Pura. Aluminium Oxide. Argillaceous Earth.

Common Name, Pure Clay.

Formula, Al_2O_3 .

Molecular Weight, 51.4.

Preparation of Alumina.—Alum free from iron is dissolved in pure boiling water, and decomposed by pure carbonate of potash, adding a little of the potash in excess. The whole is then digested gently for some time, to decompose a basic salt of alumina and sulphuric acid, which has been precipitated along with the alumina. The precipitate, now well washed and separated by filtering, is, while still moist, dissolved in muriatic acid, the solution filtered and then alumina precipitated anew by adding dilute caustic ammonium in excess. The obtained precipitate requires long continued washing to free it perfectly from retained sal ammoniac.

The mineral called *corundum*, of which the ruby and sapphire are transparent varieties, consists of nearly pure alumina in a crystallized state, with a little coloring oxide.

Properties and Tests.—Alumina is a fine white powder, soft to the touch, inodorous and tasteless, infusible, and insoluble in water.

Preparation for Homœopathic Use.—Alumina is prepared by trituration, as directed under Class VII.

ALUMINIUM METALLICUM.

Synonym, Metallic Aluminium.

Symbol, Al.

Atomic Weight, 27.5.

Origin.—This metal occurs very abundantly in nature in the state of silicate, as in feldspar and its associated minerals; also in the various modifications of clay thence derived. It was first isolated by Wöhler (1828), who obtained it as a gray powder by decomposing aluminium chloride with potassium; and H. Sainte-Claire Deville (1854) by an improved process founded on the same principle, has succeeded in obtaining it in the compact form and on the manufacturing scale.

Manufacture of Metallic Aluminium.—The process consists in decomposing the double chloride of aluminium and sodium, Al_2Cl_6 , 2NaCl , by heating it with metallic sodium, fluor-spar or cryolite being added as a flux. The reduction is effected in crucibles, or on a large scale on the hearth of a reverberatory furnace. Sodium is used as the reducing agent in preference to potassium: first, because it is more easily prepared; and, secondly, because it has a lower atomic weight, and, consequently, a smaller quantity of it suffices to do the same amount of chemical work.

Properties and Tests.—Metallic aluminium is silver-white, sonorous, unalterable in the air, and lighter than glass, having the sp. gr. 2.56 only. Its fusing point is somewhat lower than that of silver. It is not attacked by sulphuric or nitric acid, nor tarnished by sulphuretted hydrogen. Its proper solvent is muriatic acid. After silver,

gold, and platinum, it is the least alterable of the metals. By reason of its valuable properties, it will be applied to many purposes in the arts, if obtainable in sufficient quantities, and at a moderate cost.

Preparation for Homœopathic Use.—The pure metallic aluminium is prepared by trituration, as directed under Class VII.

AMBRA GRISEA.

Synonyms, Ambarum. Ambra Ambrosiaca. Ambra Vera. Ambra Maritima.

Common Name, Ambergris.

Origin.—Ambergris is regarded as a morbid product of the sperm whale, *Physeter macrocephalus*, Linn., and is found in its intestines as well as floating on the sea along the coasts of Caromandel, Japan, the Moluccas, and Madagascar. The most esteemed is that from Madagascar and Sumatra.

Description of Ambergris.—It comes in irregular pieces, varying considerably in size, is opaque, of a gray or gray-brown color, with lighter and darker colored streaks and spots, lighter than water, friable in the cold, but softening when held in the hand. It is of a waxy appearance, fusible in hot water, mixing with melted fats, and soluble in volatile oils, ether, and hot alcohol. It has a peculiar fragrance, and is nearly tasteless. It burns readily with a bright flame, leaving very little residuum.

Adulterations.—Adulterated or fictitious ambergris is readily recognized by its different physical properties.

Preparation for Homœopathic Use.—The genuine, gray ambergris, is prepared by trituration, as directed under Class VII.

AMMONIACUM.

Synonym, Dorema Ammoniacum, Don.

Nat. Ord., Umbelliferae.

Common Name, Gum Ammoniac.

This plant, which is of a striking appearance, grows to the height of six or seven feet; its leaves are all radical; the hollow stem bears a few long leaf-sheaths, and divides towards the apex into about sixteen ascending branches, upon which the small globular short-stalked umbels are born, the inflorescence forming a paniculate raceme. The root is rich in milk-juice, which rapidly diminishes in quantity, when, in about the fifth year, the stem is produced, after which the plant perishes. The gum-resin exudes from the stem and flowering branches from punctures produced by insects; an inferior kind exudes near the base of the stem among the remnants of the leaf-sheaths, and in the soil considerable quantities of hardened milk-juice are often found, which has exuded from fissures in the root produced during the hot season.

This species of dorema prefers a silicious soil, and occurs abundantly in the deserts and barren regions of Persia and Tartary.

Properties of Gum Ammoniac.—Ammoniac comes either in the state of tears, or in aggregate masses, and in both forms is fre-

quently mixed with impurities. That of the tears, however, is preferable, as the purest may be conveniently picked out and kept for use. These are of irregular shape, usually more or less globular, from two to eight lines in diameter, opaque, yellowish on the outside, whitish within, compact, homogeneous, brittle when cold, and breaking with a conchoidal, shining fracture. The smell of ammoniac is peculiar, and stronger in the mass than in the tears. The taste is slightly sweetish, bitter, and somewhat acrid. The sp. gr. is 1.207. When heated, the gum-resin softens and becomes adhesive, but does not melt. It burns with a white flame, swelling up, and emitting a smoke of a strong, resinous, slightly alliaceous odor. It is partly soluble in water, alcohol, ether, vinegar, and alkaline solutions. The alcoholic solution is transparent, but is rendered milky by the addition of water.

Preparation.—The pure gum-resin in tears, is prepared by trituration, as directed under Class VII.

AMMONIUM ACETICUM.

Synonyms, *Liquor Ammonii Acetatis* (Solution of Acetate of Ammonium). *Spiritus Mindereri* (Spirit of Mindererus).

Present Name, Ammonic Acetate.

Formula, $C_2H_3O_2NH_4$.

Preparation of Acetate of Ammonium.—Take of diluted acetic acid (acetic acid one part, distilled water seven parts), two pints; carbonate of ammonium a sufficient quantity. Add the carbonate gradually to the acid until the latter is neutralized and filter. This preparation, when dispensed, should be freshly made.

Properties.—Solution of acetate of ammonium, when made of pure materials, is a limpid and colorless liquid without smell. Its taste is saline, and resembles that of a mixture of nitre and sugar. When it contains an excess of alkali, its taste is bitterish. It should be freshly prepared at short intervals; as its acid becomes decomposed, and a portion of carbonate of ammonium is generated.

Tests.—When pure it is not colored by hydrosulphuric acid, nor precipitated by chloride of barium. Nitrate of silver precipitates crystals of acetate of silver, soluble in water, and especially in nitric acid. An insoluble precipitate with the test is chloride of silver, and shows the presence of muriatic acid. Potassa disengages ammonia; sulphuric acid, acetous vapors. When evaporated to dryness, the residue is wholly dissipated by heat with the smell of ammonia.

Preparation for Homœopathic Use.—One part by weight of pure "spirit of mindererus" is dissolved in nine parts by weight of distilled water.

Amount of drug power, $\frac{1}{100}$.

Dilutions must be prepared as directed under Class V—*a*.

AMMONIUM BENZOICUM.

Synonyms, Ammonii Benzoas. Benzoate of Ammonium.

Present Name, Ammonic Benzoate.

Formula, $\text{NH}_4 \text{C}_7 \text{H}_5 \text{O}_2$.

Molecular Weight, 139.

Preparation of Benzoate of Ammonium.—Take of benzoic acid two troy ounces; water of ammonia three fluid ounces and a half, or a sufficient quantity; distilled water four fluid ounces. Dissolve the acid in three fluid ounces and a half of the water of ammonia, previously mixed with the distilled water; evaporate with a gentle heat, occasionally adding water of ammonia, if necessary, to maintain a slight excess of the alkali; then set aside to crystallize, and dry the crystals without heat.

Properties.—Benzoate of ammonium crystallizes in colorless or white thin laminae, having a slight odor of officinal benzoic acid, and a saline, somewhat bitterish taste; it is readily soluble in alcohol and water, and when heated fuses, gives off vapors of benzoic acid, and evaporates without leaving any residue. Its solution gives, with ferric salts, a bulky light brownish-yellow precipitate, evolves ammonia when heated with potassa, and, if it be not too dilute, deposits benzoic acid when acidulated with hydrochloric acid.

Tests.—The *purity* of the salt is ascertained by its not yielding any carbonaceous mass when heated, or leaving a non-volatile residue when ignited. Its diluted solution, if acidulated with nitric acid, should not be precipitated by chloride of barium or nitrate of silver.

Preparation for Homœopathic Use.—The pure benzoate of ammonium is prepared by trituration, as directed under Class VII.

AMMONIUM BROMICUM.

Synonyms, Ammonii Bromidum. Bromide of Ammonium.

Present Name, Ammonic Bromide.

Formula, $\text{NH}_4 \text{Br}$.

Molecular Weight, 98.

Preparation of Bromide of Ammonium.—Take of bromine two troy ounces; iron in the form of wire and cut in pieces a troy ounce; water of ammonia four fluid ounces and a half; distilled water a sufficient quantity. Add the iron and then the bromine to half a pint of distilled water, contained in a glass flask having the capacity of two pints, loosely cork the flask, and agitate the mixture until the odor of bromine can no longer be perceived, and the liquid assumes a greenish color. Mix the water of ammonia with half a pint of distilled water, and add to it the mixture in the flask; agitate the mixture, and heat it by means of a water-bath for half an hour; then filter, and, when the liquid ceases to pass, wash the precipitate on the filter with boiling distilled water. Evaporate the solution in a porcelain capsule, until a pellicle begins to form, then stir it constantly with a glass rod, at a moderate heat, until it granulates.

Properties.—It is either in white granular or in larger colorless

prismatic crystals, which become yellowish on exposure. It has a neutral reaction to test paper, is readily soluble in water, sparingly so in strong alcohol, and has a pungent saline taste. If heat be carefully applied, it may be sublimed without change.

Tests.—It may be regarded as pure if, on being heated upon platinum foil, a non-volatile residue is not left behind. Its solution should not be precipitated by chloride of barium (sulphuric and phosphoric acids). The solution, mixed with some mucilage of starch, should not yield a blue color (which would indicate iodine) if a drop of chlorine or bromine water be added.

Preparation for Homœopathic Use.—The pure bromide of ammonium is prepared by trituration as directed under Class VII.

AMMONIUM CARBONICUM.

Synonyms, Ammonii Carbonas. Ammoniae Sesquicarbonas. Carbonate of Ammonium. Volatile Salt.

Present Name, Ammonic Carbonate.

Common Name, Sal Volatile.

Formula, $N_4 H_{16} C_3 O_8 = 2 (NH_4)_2 O. 3 CO_2 = 2 NH_4 HCO_3. (NH_3)_2 CO_2$.

Molecular Weight, 236.

Preparation of Carbonate of Ammonium.—This compound is extensively prepared on a large scale by heating a mixture of sal ammoniac or chloride of ammonium with twice its weight of chalk, in an earthen retort, and passing the vapors through an iron pipe into a leaden chamber where they condense. The chalk is used in excess to prevent sublimation of undecomposed chloride of ammonium, which would otherwise be apt to contaminate the product. It is then purified by resublimation from iron vessels. The reaction results in the formation of chloride of calcium and neutral carbonate of ammonium, which on condensation is converted into a salt of the above composition, water and ammonia being driven off; $6 NH_4 Cl + 3 CaCO_3$ yields $3 Ca Cl_2 + (2 NH_4)_2 O. 3 CO_2 + 2 NH_3 + H_2 O$. A similar result is obtained by using sulphate of ammonium in place of the chloride, when sulphate of calcium will be found in the residue in the retort. The ammonium salts used being almost exclusively those obtained from coal-gas liquor, the first sublimate contains tarry products, from which it is freed by resublimation.

Properties.—Carbonate of ammonium is found in commerce in white crystalline translucent masses, having a strong ammoniacal odor and alkaline reaction. Exposed to the air it parts with ammonia and carbonic acid, becomes opaque, and falls into a white powder of bicarbonate of ammonium, $NH_4 HCO_3$, which is likewise obtained by washing the powdered officinal carbonate with a little cold water, which dissolves neutral ammonium carbonate, leaving the acid carbonate behind; $2 NH_4 HCO_3. N_2 H_6 CO_2 + H_2 O$ yields $2 NH_4 HCO_3 + (NH_4)_2 CO_3$. The solution of the entire compound in water represents, therefore, a mixture of neutral and acid ammonium carbonate. It is not completely soluble in alcohol.

Tests.—Carbonate of ammonium should be completely volatilized when heated upon platinum foil; a residue would indicate the presence of non-volatile salts. The solution in diluted acids should be free from empyreumatic odor. Dissolved in a slight excess of diluted nitric acid, it is not precipitated by chloride of barium (sulphate), nitrate of silver (chloride), or sulphuretted hydrogen (metals). Traces of iron may frequently be detected in this solution by ferrocyanide or sulphocyanide of potassium. The presence of ammonium bicarbonate is indicated by the change of the translucent mass into an opaque pulverulent condition. Fifty-nine grains of carbonate of ammonium dissolved in one ounce of distilled water will be neutralized by 1000 grain measures of the volumetric solution of oxalic acid.

Preparation for Homœopathic Use.—One part by weight of pure carbonate of ammonium is dissolved in nine parts by weight of distilled water.

Amount of drug power, $\frac{1}{16}$.

Dilutions must be prepared as directed under Class V—*a*.

Triturations of pure carbonate of ammonium, prepared as directed under Class VII., have been recommended, but the great volatility of the substance renders such preparations unsuitable.

AMMONIUM CAUSTICUM.

Synonyms, Aqua Ammonia. Liquor Ammonii Caustici. Liquor Ammonia Fortior.

Present Name, Ammonic Hydrate.

Formula, $\text{NH}_4 \text{HO}$ (Ammoniacal Gas, NH_3).

Molecular Weight, 17.

Production.—Ammonia is produced during the putrefaction of all organisms and of many organic compounds containing nitrogen; it exists in the air as carbonate and nitrate. Ammoniacal salts are met with in most plants and animals. The products of the dry distillation of many nitrogenated compounds contain ammonia, and it is from such a source, namely, from the so-called gas liquor, a by-product of the manufacture of illuminating gas, that ammoniacal salts are principally obtained. (See ammonii chloridum).

Preparation of Ammonia Water.—Take of chloride of ammonium in small pieces and lime, each twelve troy ounces; water six pints; distilled water a sufficient quantity. Pour a pint of the water upon the lime, in a convenient vessel; and, after it has slaked, stir the mixture so as to bring it to the consistence of a smooth paste. Then add the remainder of the water, and mix the whole thoroughly together. Decant the milky liquid from the gritty sediment into a glass retort, of the capacity of sixteen pints, and add the chloride of ammonium. Place the retort on a sand-bath, and adapt to it a washing bottle, previously connected with a two-pint bottle by means of a glass tube, reaching nearly to the bottom of the bottle, containing a pint of distilled water. Surround the bottle with ice-cold water and apply heat, gradually increased, until ammonia ceases to come over. Remove the liquid from the bottle and add to it sufficient distilled

water to raise its specific gravity to 0.960. Lastly, keep the liquid in small bottles, well stopped.

Properties.—Ammonia water is a colorless, transparent liquid, possessing the odor and taste of the gas, lighter than distilled water, and has a lower freezing point than this liquid. It imparts a brown color to tumeric paper, a blue color to red litmus paper, and a green color to the juice of violet flowers. Ammonia neutralizes all acids, forming salts, which are mostly colorless and crystallizable, and possess a sharp saline taste. The solutions of most ammonium salts, when evaporated, lose a portion of the ammonia.

Tests.—Water of ammonia should evaporate at the temperature of boiling water without leaving any residue (salts). It does not yield a precipitate with lime-water (carbonate), with oxalate of ammonium (calcium), or, either before or after neutralization by means of nitric acid, with sulphuretted hydrogen. After acidulation with nitric acid it is not precipitated by nitrate of silver (chloride, etc.), or nitrate of barium (sulphate).

Preparation for Homœopathic Use.—The preparation, sp. gr. 0.960, contains 10 per cent. of ammoniacal gas, and therefore corresponds to the first decimal potency.

Dilutions must be prepared as directed under Class V—*a*.

AMMONIUM JODATUM.

Synonyms, Ammonii Iodidum. Iodide of Ammonium.

Present Name, Ammonic Iodide.

Formula, NH_4I .

Molecular Weight, 145.

Preparation of Iodide of Ammonium.—Take of iodide of potassium in coarse powder two troy ounces and a half; sulphate of ammonium, in coarse powder a troy ounce; boiling distilled water two fluid ounces; alcohol and water, each a sufficient quantity. Mix the salts, add them to the boiling water, stir well, and allow the mixture to cool; then add a fluid ounce of alcohol, mix well, and reduce the temperature, by a bath of iced water, to about 40° F., throw the mixture into a cooled glass funnel, stopped with moistened cotton, and when the clear solution has passed, pour upon the salt a fluid ounce of a mixture containing two parts of water, and one part of alcohol. Lastly, evaporate the solution rapidly to dryness, stirring constantly; and preserve the residue in a well-stoppered bottle. To obtain the salt chemically pure, the product must be dissolved in alcohol, filtered from the insoluble potassium sulphate, and evaporated as before.

Properties.—Iodide of ammonium is in white granular crystals having the specific gravity 2.498. If the air is excluded, they sublime undecomposed, but in contact with the atmosphere acquire a yellowish-brown color. The salt is deliquescent, and dissolves freely in water and alcohol, the solutions becoming yellow on exposure. Iodine is liberated on the addition of nitric acid, and ammonia by potassa or lime. The aqueous solution, mixed with some mucilage of starch becomes blue on the addition of a little chlorine water.

Tests.—The purity of the salt is recognized by its complete volatility and by its solution yielding not any, or only a slight turbidity with barium chloride (sulphate). Bromide and chloride of ammonium are recognized by precipitating the solution with nitrate of silver, and adding ammonia in excess, in which silver iodide is very sparingly soluble, so that the ammoniacal liquid will yield merely a slight turbidity on the addition of nitric acid. If a precipitate occurs, this is agitated with chlorine water gradually added in the presence of chloroform, which will be colored red if bromine be present; if the chloroform is not colored, the impurity is a chloride. The solution of ten grains of iodide of ammonium, treated with sufficient nitrate of silver, yields a precipitate which, after washing and drying, weighs 16.8 grains.

Preparation for Homœopathic Use.—The pure iodide of ammonium is prepared by trituration, as directed under Class VII.

AMMONIUM MURIATICUM.

Synonyms, Ammonii Chloridum. Ammonium Chloratum. Muriate of Ammonia. Chloride of Ammonium.

Present Name, Ammonic Chloride.

Common Name, Sal Ammoniac.

Formula, $\text{NH}_4 \text{Cl}$.

Molecular Weight, 53.5.

Preparation of Chloride of Ammonium.—Chloride of ammonium is most generally obtained from the so-called coal-gas liquor, a watery liquid condensed in the preparation and purification of illuminating gas from coal, and containing principally carbonate of ammonium, besides some sulphide, cyanide, and empyreumatic products. This is occasionally neutralized by hydrochloric acid, or decomposed by chloride of calcium, in both of which cases a solution of ammonium chloride is obtained, which is evaporated and the dry salt afterwards sublimed. More frequently the gas-liquor is neutralized by sulphuric acid, and the resulting solution of ammonium sulphate evaporated and crystallized. The more or less brown-colored crystals are mixed with sodium chloride (table salt), and the mixture is sublimed from iron pots, the vapors being condensed upon the inside of leaden or iron domes. On the application of heat a mutual decomposition of the ammonium sulphate and sodium chloride occurs, resulting in the formation of ammonium chloride, which sublimes, and sodium sulphate, which remains behind; $(\text{NH}_4)_2 \text{SO}_4 + 2\text{NaCl}$ yields $2\text{NH}_4 \text{Cl} + \text{Na}_2 \text{SO}_4$. From the corrosive action of the vapors upon iron, the product is always contaminated with chloride of iron.

Purification of Chloride of Ammonium.—Take of chloride of ammonium in small pieces twenty troy ounces; water of ammonia five fluidrachms; water two pints. Dissolve the chloride of ammonium in the water, in a porcelain dish, with the aid of heat, add the water of ammonia, and continue the heat for a short time; filter the solution while hot, and evaporate to dryness, with constant stirring at a moderate heat, until it granulates. The object of this process is to remove

the iron, which is precipitated by the ammonia as ferric hydrate, and separated by filtration, while hot. If the sal ammoniac has been otherwise pure, the filtrate may be evaporated to dryness, and granulated, as directed above. If, however, it contains other impurities besides the iron, it is best to allow the filtrate to cool, stirring it occasionally, and to collect the crystalline powder upon a muslin strainer. The impurities will remain in the mother-liquor.

Properties of Purified Chloride of Ammonium.—It forms in a snow-white granular crystalline powder, free from odor, and has a cooling and strongly saline taste. Its specific gravity is 1.45, and it is soluble in about three parts of cold and in little more than its own weight of boiling water. During the solution of the salt in water much heat becomes latent, and the temperature is considerably reduced. On the application of heat it volatilizes without residue, and is condensed again unchanged. When the solution is heated with potassa or lime, gaseous ammonia is given off; and when treated with nitrate of silver, a curdy white precipitate is produced; but no change occurs on the addition of chloride of barium. The solution of chloride of ammonium has a faint acid reaction, and does not acquire a bluish-black color by tannin, or a blue coloration on the addition of ferrocyanide of potassium.

Tests.—Chloride of ammonium is little subject to adulteration. Its chief impurities are iron, and sulphate of ammonium, which may be detected by the methods already mentioned.

Preparation for Homœopathic Use.—One part by weight of pure chloride of ammonium is dissolved in nine parts by weight of distilled water.

Amount of drug power, $\frac{1}{15}$.

Dilutions must be prepared as directed under Class V—*a*.

Triturations of the pure chloride of ammonium are prepared as directed under Class VII.

AMMONIUM NITRICUM.

Synonyms, Ammonii Nitras. Nitrum Flammans. Nitrate of Ammonium.

Present Name, Ammonic Nitrate.

Formula, $\text{NH}_4 \text{NO}_3$.

Molecular Weight, 80.

Preparation of Nitrate of Ammonium.—Nitric acid is neutralized with ammonia or carbonate of ammonium, or, in place of the latter, the pulverulent bicarbonate, which accumulates in the shops, may be advantageously employed; the solution is concentrated by evaporation and crystallized, or until it congeals on cooling.

Properties.—It crystallizes in hexagonal prisms or needles, or occurs in colorless crystalline masses. It has the specific gravity 1.70, and possesses a sharp bitterish taste. It deliquesces in contact with moist air, and dissolves at ordinary temperatures in about half its weight of water, and about three parts of alcohol of the specific gravity 0.880. On the application of heat it softens and then fuses at

108° C. (226.4° F.), and when rapidly heated, is decomposed into water, nitrous acid, and nitrogen, or into nitrous and nitric oxides, nitrate of ammonium, and ammonia; but, if gradually heated to near the temperature of 200° C. (392° F.), it is decomposed into water and nitrous oxide or *laughing gas*, N_2O .

It detonates when thrown upon red-hot charcoal, or when mixed with powdered charcoal, and heated to 170° C. (338° F.). When mixed with sulphuric acid, nitric acid vapors are given off, and potassa or lime evolves ammonia when heated with the aqueous solution.

Tests.—The salt should be completely volatilized without charring when heated upon platinum foil, and its aqueous solution should not be precipitated either by silver nitrate or barium chloride (absence of chloride and sulphate).

Preparation for Homœopathic Use.—One part by weight of pure nitrate of ammonium is dissolved in nine parts by weight of distilled water.

Amount of drug power, $\frac{1}{10}$.

Dilutions must be prepared as directed under Class V—*a*.

AMMONIUM PHOSPHORICUM.

Synonyms, Ammonii Phosphas. Phosphate of Ammonium.

Present Name, Hydro-Diammonic Phosphate.

Formula, $(NH_4)_2 HPO_4$.

Molecular Weight, 132.

Preparation of Phosphate of Ammonium.—Take of diluted phosphoric acid twenty fluid ounces; strong solution of ammonia a sufficiency. Add the ammonia to the phosphoric acid until the solution is slightly alkaline, then evaporate the liquid, adding ammonia from time to time so as to keep it in slight excess, and when the crystals are formed, on the cooling of the solution, dry them quickly on filtering-paper placed on a porous tile, and preserve them in a stoppered bottle.

Properties.—The officinal phosphate of ammonium crystallizes in transparent colorless prisms having the specific gravity 1.678 (Buiget, 1861). It has a cooling and sharply saline taste, effloresces superficially in a dry atmosphere, is insoluble in alcohol, but dissolves in 4 parts of cold and in less of boiling water. The solution yields a yellow precipitate with nitrate of silver, and evolves ammonia on continued boiling or when heated with potassa. The salt, when heated, fuses and is gradually converted into metaphosphoric acid.

Tests.—Twenty grains of the salt, dissolved in water and precipitated by ammonio-sulphate of magnesium, yield a crystalline precipitate, which, when well washed with diluted ammonia water, dried and ignited, weighs 16.8 grains. The solution acidulated with nitric acid should yield no precipitate with barium chloride (sulphate) or silver nitrate (chloride). Ten grains of the salt, gradually heated upon platinum foil to redness, should leave a residue weighing 6.1 grains.

Preparation.—The pure phosphate of ammonium is prepared by trituration, as directed under Class VII.

AMMONIUM VALERIANICUM.

Synonyms, Ammonii Valerianas. Valerianate of Ammonium.

Present Name, Ammonic Valerianate.

Formula, $\text{NH}_4 \text{C}_5 \text{H}_9 \text{O}_2$.

Molecular Weight, 119.

Preparation of Valerianate of Ammonium.—Take of valerianic acid four fluid ounces. From a mixture of chloride of ammonium in coarse powder, and an equal weight of lime previously slaked and in powder, contained in a suitable vessel, obtain gaseous ammonia, and cause it to pass, first through a bottle filled with pieces of lime, and afterwards into the valerianic acid, in a tall, narrow glass vessel, until the acid is neutralized. Then discontinue the process, and set the vessel aside that the valerianate of ammonium may crystallize. Lastly, break the salt into pieces, drain it if necessary in a glass funnel, dry it on bibulous paper, and keep it in a well-stoppered bottle.

Properties.—Valerianate of ammonium, thus prepared, forms colorless or white quadrangular plates, having the odor of valerianic acid and possessing a sharp and sweet taste. It effloresces when placed in a dry atmosphere, and deliquesces in moist air. On the application of heat, it fuses, giving off ammoniacal and acid vapors, and is finally dissipated, without leaving any residue. It dissolves freely in water and alcohol, the solutions, on evaporation, acquiring an acid reaction from the loss of ammonia. Alkalies decompose it with the evolution of ammonia, and the stronger acids with the separation of oily valerianic acid floating upon the aqueous solution. Should the salt have an acid reaction, its solution, when dispensed, should be neutralized by the careful addition of some ammonia, whereby the disagreeable odor and taste of valerianic acid are masked to a considerable extent.

Tests.—Heated to redness upon platinum foil, the salt leaves no residue (potassium, etc., salts). Its aqueous solution, after having been acidulated with nitric acid, is not precipitated by chloride of barium (sulphate), or nitrate of silver (chloride), or, after having been rendered alkaline by ammonia, by sulphate of magnesium (phosphate). When the aqueous solution is treated with an excess of sulphuric acid and the clear watery liquid is nearly neutralized with ammonia, a red coloration is not produced on the addition of a little tersulphate of iron (absence of acetate).

Preparation for Homœopathic Use.—The pure valerianate of ammonium is prepared by trituration, as directed under Class VII.

AMPELOPSIN.

Resinoid of Ampelopsis Quinquefolia.

Preparation.—The resinoid, as obtained from the chemist, is prepared by trituration, as directed under Class VII.

AMPELOPSIS.

Synonym, *Ampelopsis Quinquefolia*, *Michaux.*

Nat. Ord., Vitaceæ.

Common Name, Virginian Creeper.

This is a common woody vine, growing in low or rich grounds throughout the United States, climbing extensively, sometimes by rootlets as well as by its disk-bearing tendrils. Tendrils fixing themselves to trunks of trees or walls by dilated sucker-like disks at their tips; leaves digitate, with five oblong-lanceolate sparingly serrate leaflets; flower-clusters, cymose, of a greenish-white color. Calyx slightly five-toothed. Petals concave, thick, expanding before they fall. Its blossoms appear in July, its small, blackish berries ripening in October. It is also called *American Ivy*, and still less appropriately, *Woodbine*. Its smooth dark-green leaves turn crimson in autumn.

Preparation.—Equal parts of the fresh young shoots and the fresh bark are chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well and having poured it into a well-stoppered bottle, it is allowed to stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{3}$.

Dilutions must be prepared as directed under Class III.

AMPHISBÆNA VERMICULARIS.

Synonym, *Amphisbæna Flavescens*.

Class, Reptilia.

Order, Sauria.

Family, Annulata.

Poison of a South American Snake.

This species of snake moves either backwards or forwards, as occasion may require, and is quite common in the woods of Brazil. Its body is cylindrical, from two to two and a half feet long, terminated by a very obtuse tail. It has no scales properly speaking, but its skin is divided into quadrilateral compartments disposed in rings around the body; 228 on the trunk and 26 on the tail. The lower lip is divided into six long and narrow plates; the head is small, rather sharp, protected by scutellæ, and not distinguished from the neck. It has small eyes; the jaw is not dilatable, the teeth are conical, bent, unequal and distinct from each other; the nostrils are on the sides, and pierced in a single naso-rostral plate. The *amphisbæna* is of a brownish color above, and a pinkish-white under the belly.

Preparation.—The poison taken from the living animal by cutting off part of its jaw, is triturated as directed under Class IX.

AMYGDALÆ AMARÆ, De Candolle.

Synonyms, Amygdalus Communis. Prunus Amygdalus.

Nat. Ord., Amygdaleæ.

Common Name, Bitter Almond.

The almond-tree is a native of Persia, Syria, and Barbary, and is very extensively cultivated in various parts in the south of Europe. The tree rises usually from fifteen to twenty feet in height, and divides into numerous spreading branches. Its leaves are about three inches long, and three quarters of an inch broad, pointed at both ends, and are of a bright green color. The flowers are large, of a pale red color varying to white, and usually stand in pairs upon the branches. The fruit is of the peach kind, with the outer covering thin, tough, dry, and marked with a longitudinal furrow, where it opens when fully ripe. Within this covering is a rough shell, containing the kernel or almond.

Preparation.—The ripe kernel is finely chopped and pounded, covered with five parts by weight of alcohol, and allowed to stand eight days in a well-stoppered bottle, in a dark, cool place, shaking it twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{16}$.

Dilutions must be prepared as directed under Class IV.

Triturations are prepared from the ripe kernel, as directed under Class VII.

AMYL NITRITE.

Synonyms, Nitrite of Amyl. Amyl Nitris.

Formula, $C_5H_{11}NO_2$.

Molecular Weight, 117.

Preparation of Nitrite of Amyl.—Purified amylic alcohol is introduced into a capacious glass retort with about an equal bulk of nitric acid; a gradually increasing heat is applied until the mixture approaches boiling, when the reaction will proceed spontaneously. The distillate is collected until the temperature in the retort rises above 100° C. (212° F.), the portion distilling at a higher temperature containing much nitrate of amyl and ethylamylic ether. The distillate obtained below 100° is agitated with water and an alkali (potassa, lime, or their carbonates) to remove hydrocyanic, nitric and nitrous acids; and the oily layer, which separates, is rectified from a clean retort by a gradually increased heat; amylic aldehyd coming over in the first portion, that distilling between 95° and 100° C. is collected separately. If not carefully rectified, it requires to be purified by fractional distillation.

Properties.—Nitrite of amyl is an ethereal liquid of a yellowish color and a peculiar, not disagreeable, odor. It has the specific gravity 0.877, and boils constantly, and without being decomposed, at 96° C. (205° F.). It is insoluble in water but dissolves in rectified spirit in all proportions. If it be added drop by drop to caustic potassa heated to fusion, valerianate of potassium will be formed, frequently with the production of flame.

Tests.—It may be considered pure if its physical properties agree with the above, and the boiling point does not rise above 100° C.

Preparation for Homœopathic Use.—Two parts by weight of pure nitrite of amyl are dissolved in nine parts by weight of 95 per cent. alcohol.

Amount of drug power, $\frac{1}{16}$.

Dilutions must be prepared as directed under Class VI—*a*

ANACARDIUM ORIENTALE.

Synonyms, Semecarpus Anacardium, *Linn.* Anacardium Officinarium.

Nat. Ord., Anacardiaceæ.

Common Names, Marking-nut Tree. Malacca-bean. Anacardium.

This is a small and elegant tree, growing in the West Indies and other parts of tropical America. The beans or nut are heart-shaped, consisting of two shells, with a black juice between them, and of a sweet oily kernel. Great precaution is to be advised in handling these nuts, for the juice coming in contact with an irritable skin causes eruptions like pustules, which are very painful and their cure difficult.

Preparation.—The pulverized seed is covered with five parts by weight of 95 per cent. alcohol, and allowed to stand eight days in a well-stoppered bottle, in a dark, cool place, shaking it twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{16}$.

Dilutions must be prepared as directed under Class IV.

Triturations are to be prepared from the soft resin contained in the fruit, as directed under Class IX.

ANAGALLIS.

Synonyms, Anagallis Arvenis, *Linn.* Anagallis cœrulea.

Nat. Ord., Primulaceæ.

Common Names, Scarlet Pimpernel. Poor Man's Weather-Glass.

This plant is a native of Europe, having been naturalized in this country. The slender, mostly decumbent stems are smooth, branched, four-edged; the branches opposite diffused, the leaves clasping, opposite, ovate-lanceolate, entire-obtuse, with blackish translucent spots underneath. The small, but beautiful flowers, red like red lead, stand in pairs on long pedicels in the axils. Calyx five-parted. Corolla wheel-shaped, with almost no tube, five-parted, longer than the calyx; the divisions broad. Petals obovate, obtuse, fringed with minute teeth or stalked glands. Stamens five; filaments bearded. Pod membranaceous, circumscissile, the top falling off like a lid, many seeded. The flowers quickly closing at the approach of bad weather, gave origin to its common English name Poor Man's Weather-glass. The flowers appear in July and August.

Preparation.—The fresh plant (of the red-flowered variety only), gathered before the development of the flowers, is chopped and pounded

to, a pulp and pressed out *lege artis* in a piece of new linen. The expressed juice is then, by brisk agitation, mingled with an equal part by weight of alcohol. This mixture is allowed to stand eight days in a well-stoppered bottle, in a dark, cool place, and then filtered.

Drug power of tincture, $\frac{1}{4}$.

Dilutions must be prepared as directed under Class I.

ANANTHERUM MURICATUM.

Synonyms, *Andropogon Muricatus*, Retz. *Vetiveria Odorata*, Vivana.

Nat. Ord., Gramineæ.

Common Names, Bena. Cuscus. Vetiver. Viti-vayr.

A well known grass in the East Indies, cultivated on the Markarentas Islands for its medical use; the root is aromatic and stimulating or diaphoretic.

Preparation.—The root is finely powdered and covered with five parts by weight of alcohol, and then poured into a well-stoppered bottle, and allowed to stand eight days in a dark, cool place, shaking it twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{16}$.

Dilutions must be prepared as directed under Class IV.

ANDIRA INERMIS, Kunth.

Synonyms, *Andira Refusa*. *Geoffroya Inermis*.

Nat. Ord., Leguminosæ.

Common Names, Bastard Cabbage Tree. Cabbage Tree Bark.

This is a leguminous tree, with a stem rising to a considerable height, branched towards the top, and covered with a smooth gray bark. The leaves are pinnate, consisting of six or seven pairs of ovate-lanceolate, pointed, veined, smooth, petiolate leaflets, with an odd one at the end. The flowers are rose-colored, and in terminal panicles, with very short pedicels. The tree is a native of Jamaica and other West India Islands. The bark, which is the part used, comes in long pieces, thick, fibrous; externally of a brownish-ash color, scaly, and covered with lichens; internally yellowish; of a resinous fracture, a disagreeable smell, and a sweetish, mucilaginous, bitterish taste.

Properties.—The bark, finely pulverized, is covered with five parts by weight of alcohol, and having been poured into a well-stoppered bottle, it is allowed to stand eight days in a dark, cool place, shaking it twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{16}$.

Dilutions must be prepared as directed under Class IV.

ANEMONIN.

An alkaloid obtained from *Anemone Pratensis*.

Preparation of Anemonin.—M. Dobraschinsky obtains it by a

method founded on its solubility in chloroform. The distilled water of *Anemone pratensis* is agitated with one-tenth of this liquid, with which it is continued in contact for some hours; the liquid on standing separates into two layers, the heavier of which, containing the chloroformic solution, is distilled. The chloroform passes, and the residue, constituting one-eighth of the solution, is treated with strong alcohol, heated, and set aside to crystallize. Anemonin separates in handsome crystals having all the properties of that very poisonous alkaloid.

Preparation for Homœopathic Use.—Anemonin is prepared by trituration as directed under Class VII.

ANGELICA ARCHANGELICA, *Linn.*

Synonym, *Archangelica gmelini.*

Nat. Ord., Umbelliferae.

Common Names, Garden Angelica. American Covage.

Garden angelica has a long, thick, fleshy, biennial root, furnished with many fibres, and sends up annually a hollow, jointed, round, channeled, smooth, purplish stem, which rises five feet or more in height, and divides into numerous branches: The leaves, which stand upon round fistulous footstalks, are very large, doubly pinnate, with ovate-lanceolate, pointed, acutely serrate leaflets, the terminal being three-lobed. The flowers are small, greenish-white, and disposed in very large, many-rayed terminal umbels, composed of numerous dense, hemispherical umbellets. This plant is a native of the north of Europe; is cultivated in the gardens of Europe, and is occasionally met with in the gardens of this country.

Preparation.—The dried root is finely powdered and covered with five parts by weight of alcohol. Having poured it into a well-stoppered bottle, it is allowed to stand eight days in a dark, cool place, shaking twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{16}$.

Dilutions must be prepared as directed under Class IV.

ANGUSTURÆ CORTEX.

Synonym, *Galipea Cusparia, St. Hilaire.*

Nat. Ord., Rutaceae.

Common Name, Angustara or Cusparia bark.

This is a small tree, irregularly branched, rising to the medium height of twelve or fifteen feet, with an erect stem from three to five inches in diameter, and covered with a smooth gray bark. The leaves are from six to ten inches long, and from two to four broad; they are very smooth and glossy, of a vivid green color, marked occasionally with small whitish round spots, and when fresh, of a strong odor resembling that of tobacco. The flowers are numerous, white, arranged in axillary and terminal peduncled racemes, and of a peculiar unpleasant odor. The tree grows abundantly on the mountains of Carony,

between the 7th and 8th degrees of N. latitude. It flourishes at the height of from six hundred to one thousand feet above the level of the sea.

Preparation.—The dried bark is pulverized and covered with five parts by weight of alcohol. Having poured it into a well-stoppered bottle, it is allowed to stand eight days in a dark, cool place, shaking it twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{10}$.

Dilutions must be prepared as directed under Class IV.

ANISUM STELLATUM.

Synonym, *Illicium Anisatum*, Linn.

Nat Ord., Magnoliaceæ.

Common Names, Star Anise-Seed. Badiane.

This is an evergreen tree growing in China, Japan, and Tartary. It is a bush something like the laurel, with aromatic bark, yellow axillary flowers, calyx of six leaves, twenty seven petals, many two-valved capsules, monosperm; disposed around; fruit star-shaped, formed by the assemblage of six or eight capsules, oval, compressed, uni-valve, close at the base and open above, containing each one seed, shining, oval and flattened. This fruit has an aromatic odor, intense and agreeable, and an acrid, bitter, hot and piercing taste.

Preparation.—The dried, powdered fruit, is covered with five parts by weight of alcohol. Having poured it into a well-stoppered bottle, it is allowed to stand eight days in a dark, cool place, shaking it twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{10}$.

Dilutions must be prepared as directed under Class IV.

ANTHEMIS.

Synonym, *Anthemis Nobilis*, Linn.

Nat Ord., Asteraceæ.

Common Names, Common Chamomile. Roman Chamomile.

This is an herbaceous plant with a perennial root. The stems are from six inches to a foot long, round, slender, downy, trailing, and divided into branches, which turn upwards at their extremities. The leaves are bipinnate, the leaflets small, threadlike, somewhat pubescent, acute, and generally divided into three segments. The flowers are solitary, with a yellow convex disk, and white rays. The calyx is common to all the florets, of a hemispherical form, and composed of several small imbricated hairy scales. The receptacle is convex, prominent, and furnished with rigid bristle-like *paleæ*. The florets of the ray are numerous, narrow, and terminated with three small teeth. The whole herb has a peculiar fragrant odor, and a bitter aromatic taste.

This plant is a native of Europe, and grows wild in all the temperate parts of that continent.

Preparation.—The whole, fresh plant, gathered when coming into flower, is chopped and pounded to a pulp and weighed. Then two

parts by weight of alcohol are taken, and after mixing the pulp thoroughly with one sixth part of it, the rest of the alcohol is added. After having stirred the whole well, and having poured it into a well-stoppered bottle, it is allowed to stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{8}$.

Dilutions must be prepared as directed under Class III.

ANTHOXANTHUM ODORATUM, Linn.

Nat. Ord., Gramineæ.

Common Name, Sweet Vernal Grass.

This is a perennial, found growing in meadows, woods and on river banks, in Arctic Europe, Northern Africa, Siberia, Dahuria and Greenland; and has been introduced into North America. Its stem is from six to eighteen inches high, shining. Leaves flat, hairy; sheaths furrowed, often pubescent, mouth pilose. Panicle one to five inches long, pubescent or villous; branches short. Spikelets one-quarter to one-third inch long, fascicled, often squarrose, green; empty glumes ovate, acute, upper lanceolate, almost awned; two succeeding glumes two-lobed, pilose, awn in the sinus slender exserted; flower glume smaller, glabrous, obtuse, awnless. Palea one-nerved. Scales none. Stamens two; anthers large, linear, yellow, ovary glabrous; styles long, stigmas feathery. Fruit terete, acute, enclosed in the brown-shining flower glume and palea. Flowers appear in May and June.

Preparation.—The fresh herb, in flower, is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, and having poured it into a well-stoppered bottle, it is allowed to stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{8}$.

Dilutions must be prepared as directed under Class III.

ANTHRACITE.

This is the *stone coal* found in many parts of the world, but more particularly in Pennsylvania, U. S. A. It differs from the ordinary *bituminous* or *coking coal*, in containing less volatile matter, and, therefore, in burning without flame, and in giving more heat. It contains about 90 per cent. of carbon, partly in the form of organic compounds.

Preparation.—Anthracite is prepared by trituration as directed under Class VII.

ANTHRAKOKALI.

Synonym, Lithanthrakokali Simplex.

Preparation of Anthrakokali.—To seven parts of freshly prepared caustic potash in a state of fusion are added five parts of finely

pulverized anthracite coal (which may be obtained from *Fünfkirchen*, a town in the Baranya district of Hungary); the vessel is taken from the fire, and the mixture triturated till a perfectly uniform black powder is formed, which is preserved in small, well-stoppered bottles.

Properties.—Rightly prepared anthrakokali is a black, very subtle, staining powder of alkaline taste; is inodorous and becomes moist in the air without deliquescing.

Tests.—Five grains of the preparation dissolved in an ounce of distilled water will yield a darkish-brown solution, so dark indeed that after all insoluble matter has subsided the liquid is translucent only in thin layers.

Preparation for Homœopathic Use.—Anthrakokali is prepared by trituration as directed under Class VII. It must be preserved in well-stoppered bottles.

ANTIMONIUM CRUDUM.

Synonyms, Antimonii Sulphuretum. Stibium Sulphuretum Nigrum. Tersulphuret of Antimony. Sulphuret of Antimony. Black (Crude) Antimony.

Present Name, Antimonious Sulphide.

Formula, $Sb_2 S_3$.

Molecular Weight, 340.

Origin.—It is found native as gray antimony ore or black antimony, and associated with galena, iron pyrites, quartz, and heavy spar, from which it is freed by fusion in pots arranged in such a manner that the fused sulphide runs off into earthen vessels where it cools. It is afterwards powdered.

Properties.—Thus purified it is known in commerce as crude antimony, and contains variable small quantities of iron and often traces of arsenic, lead and copper, all in the state of sulphides. From the shape of the pots in which it has cooled, it usually is in the form of blunt cones, which are of a blackish color, and when broken have a metallic lustre and a crystalline texture, or it is more frequently seen as a heavy black and somewhat shining powder. Its ready fusibility distinguishes it at once from black oxide of manganese. It has the specific gravity of 4.62.

Tests.—Commercial sulphuret of antimony is sometimes adulterated with coal dust, or mixtures of powdered coal and chalk are sold in place of it. The latter effervesce briskly with dilute hydrochloric acid, forming a solution containing calcium chloride. On heating 1 part of the sulphuret with 10 or 12 parts of hydrochloric acid but very little residue should be left, and a solution should be obtained in which, after the sulphuretted hydrogen has been expelled, stannous chloride should indicate only traces of arsenic. After diluting the acid solution with five or six times its bulk of water, and filtering from the precipitated oxychloride of antimony, the filtrate should give no precipitate or only a slight one (lead) by dilute sulphuric acid, should yield with ferrocyanide of potassium merely a slight blue precipitate (iron), and, when mixed with an excess of ammonia and

filtered, should furnish a colorless or only a faintly blue filtrate (copper).

Preparation for Homœopathic Use.—The purified sulphuret of antimony is prepared by trituration, as directed under Class VII.

ANTIMONIUM IODATUM.

Synonyms, Antimonii Iodidum. Iodide of Antimony. Teriodide of Antimony.

Preparation of Iodide of Antimony.—According to Mr. W. Copney, of London, this iodide may be conveniently prepared by gently heating in a Florence flask metallic antimony and iodine, in the proportion of one eq. to three. The elements combine with sudden heat and liquefaction, and, upon the withdrawal of the heat, the iodide formed solidifies, and is removed from the flask by breaking it. Iodide of antimony, as thus prepared, forms a somewhat crystalline, foliated mass, which, when pulverized, yields a deep orange-red powder. By the action of water it is decomposed.

Preparation for Homœopathic Use.—Iodide of antimony is prepared by trituration, as directed under Class VII.

ANTIMONIUM OXYDATUM.

Synonyms, Antimonii Oxidum. Oxide of Antimony.

Present Name, Antimonious Oxide.

Formula, Sb_2O_3 .

Molecular Weight, 292.

Preparation of Oxide of Antimony.—Take of sulphuret of antimony in very fine powder four troy ounces; muriatic acid eighteen troy ounces; nitric acid a troy ounce and one hundred and twenty grains; water of ammonia a fluid ounce and a half; water, distilled water, each a sufficient quantity. Introduce the sulphuret into a flask of the capacity of two pints, and having added the muriatic acid, digest by means of a sand-bath, until effervescence ceases. Then, having removed the flask from the sand-bath, add the nitric acid gradually; and, when nitric acid vapors cease to be given off, and the liquid has grown cold, add to it half a pint of water and filter. Pour the filtered liquid gradually into twelve pints of water, constantly stirring, and allow the precipitate to subside. Decant the supernatant liquid, and wash the precipitate twice by decantation, using each time eight pints of water. Then transfer it to a muslin filter to drain, and, after the drainage is completed, wash it with water until the washings cease to have an acid reaction. Next introduce it into a suitable vessel, and subject it to the action of the water of ammonia for two hours; at the end of which time transfer it to a moistened muslin filter, and wash it with distilled water as long as the washings produce a precipitate with nitrate of silver. Lastly, dry the precipitate upon bibulous paper with the aid of a gentle heat.

Properties.—Antimonious oxide is a dense white or greyish-white powder, which is insoluble in water, but dissolves readily in hydro-

chloric or tartaric acid. It fuses at a dull red heat into a yellowish liquid, solidifying on cooling into a pearl-colored crystalline mass. At a higher heat it volatilizes with white vapors, and when heated with soda upon charcoal by means of the blowpipe, very brittle metallic globules are obtained. Its solution in hydrochloric acid yields a white precipitate with water, and an orange-red precipitate with sulphuretted hydrogen.

Tests. Oxide of antimony should dissolve completely when boiled with an excess of acid potassium tartrate (earthy impurities, etc.), and its solution in tartaric acid should not be precipitated by nitrate of silver (chlorides), chloride of barium (sulphates), or ferrocyanide of potassium (metals).

Preparation for Homœopathic Use.—The pure oxide of antimony is prepared by trituration, as directed under Class VII.

ANTIMONII OXYSULPHURETUM.

Synonyms, Stibium Sulfuratum Rubeum. Oxysulphuret of Antimony. Kermes Mineral.

Composition, a mixture of $Sb_2 S_3$ and $Sb_2 O_3$.

Preparation of Oxysulphuret of Antimony.—Take of sulphuret of antimony in very fine powder a troy ounce; carbonate of sodium twenty-three troy ounces; water sixteen pints. Dissolve the carbonate of sodium in the water previously heated to the boiling point, and, having added the sulphuret of antimony, boil for an hour. Then filter rapidly into a warm earthen vessel, cover this closely, and allow the liquid to cool slowly. At the end of twenty-four hours, decant the supernatant liquid, drain the precipitate on a filter, wash it with cold water that has been previously boiled, and dry it without heat. Lastly, preserve the powder in a well-stoppered bottle, protected from the light.

Properties and Tests.—Oxysulphuret of antimony is a purplish-brown, tasteless powder, soft and velvety to the touch, wholly and readily soluble in hydrochloric acid with evolution of hydrosulphuric acid gas, and partly soluble in a hot solution of potassa, leaving a residue soluble in tartaric acid. On examination with the microscope it is found to be a mixture of amorphous globules of the sulphuret with minute transparent prisms of oxide of antimony, which latter is dissolved by the action of solution of tartaric acid.

Preparation for Homœopathic Use.—The pure oxysulphuret of antimony is prepared by trituration, as directed under Class VII.

ANTIMONIUM SULPHURATUM AURATUM.

Synonyms, Antimonii Sulphuratum Aureum. Sulphurated Antimony. Golden Sulphuret of Antimony. Golden Sulphur.

Composition, $Sb_2 S_3$ and $Sb_2 S_5$ mixed with a small and variable amount of $Sb_2 O_3$.

Preparation of Sulphurated Antimony.—Take sulphuret of antimony in very fine powder six troy ounces; solution of potassa four

pints; distilled water, diluted sulphuric acid (sulphuric acid two troy ounces, distilled water fourteen fluidounces, mixed), each a sufficient quantity. Mix the sulphate of antimony with the solution of potassa and twelve pints of distilled water, and boil the mixture over a gentle fire for two hours, constantly stirring, and occasionally adding distilled water so as to preserve the same measure. Strain the liquid immediately through a double muslin strainer, and drop into it, while yet hot, diluted sulphuric acid so long as it produces a precipitate. Then wash the precipitate with hot water to remove the sulphate of potassium, dry it, and rub it into a fine powder.

Properties and Tests.—Sulphurated antimony is a reddish-brown powder, insoluble in water. When treated with twelve times its weight of officinal hydrochloric acid, with the aid of heat, it is nearly all dissolved, with effervescence of hydro-sulphuric acid gas. The residue, after having been washed and dried, burns with the characters of sulphur, and leaves a scanty ash. The solution in hydrochloric acid, when added to water, deposits a white powder. The liquid filtered from this powder yields an orange-red precipitate with hydro-sulphuric acid. Water in which the preparation has been boiled should not yield a white precipitate with chloride of barium or with oxalate of ammonium. The last two tests indicate the absence of sulphates and of calcium compounds. The precipitate, which falls when a solution of 60 grains of sulphurated antimony in sufficient hydrochloric acid is dropped into water, should, after washing and drying, weigh about 53 grains.

Preparation for Homœopathic Use.—The pure sulphurated antimony is prepared by trituration, as directed under Class VII.

ANTIMONIUM TARTARICUM.

Synonyms, Antimonii Potassii-tartras. Tartarus Emeticus. Tartarus Stibiatus. Stibio-Kali Tartaricum. Tartrate of Antimony and Potassium. Tartarated Antimony.

Present Name, Potassio-antimonic Oxytartrate.

Common Name, Tartar Emetic.

Formula, $2 (K Sb O C_4 H_4 O_6) \cdot H_2 O$.

Molecular Weight, 668.

Preparation of Tartar Emetic.—Take of oxide of antimony in very fine powder two troy ounces; bitartrate of potassium in very fine powder two troy ounces and a half; distilled water eighteen fluid ounces. To the water, heated to the boiling point in a glass vessel, add the powders, previously mixed, and boil for an hour; then filter the liquid while hot, and set it aside that crystals may form. Lastly, dry the crystals, and keep them in a well-stoppered bottle.

Properties.—Tartrate of antimony and potassium produces colorless transparent crystals, which have the form of a rhombic octahedron, become white and opaque on exposure to the air, and have a strong metallic taste. The aqueous solution is precipitated on the addition of alcohol in the form of crystalline powder; in this manner a pure powder of tartar emetic is readily and most advantageously obtained

for pharmaceutical purposes. The solution yields with hydrochloric and other mineral acids a white precipitate of an oxy-salt of antimony, which is soluble in hydrochloric acid, and does not occur if tartaric acid has been previously added to the solution. Hydrosulphuric acid causes an orange-red precipitate, which, when obtained from 20 grains of the salt, after washing and drying at 100° C. (212° F.), weighs 9.91 grains. A solution of tartar emetic which is not too dilute produces a flocculent precipitate on the addition of infusion of galls; an excess of the latter redissolves the precipitate.

Tests.—Chlorides and sulphates, if present, are detected in the solution acidulated with acetic acid, by nitrate of silver and chloride of barium, calcium by ammonium oxalate, and copper by ferrocyanide of potassium. Arsenic is detected by carefully heating about 20 or 30 grains of the salt until a black residue remains; on gradually increasing the temperature to redness, a garlic-like odor will be evolved. The impurity which is likely to be met with in consequence of faulty preparation is cream of tartar, the presence of which cannot be detected by its behavior to test paper, since the solution of tartar emetic has an acid reaction. By dissolving 24 grains of the salt in a fluid ounce of warm water and cooling the solution to 10° C. (50° F.), it should remain clear. A crystalline deposit will occur if more than eight per cent. of cream of tartar is present. The solution of pure tartar emetic, even if largely diluted, will at once become turbid on the addition of a little carbonate of potassium; in the presence of acid tartrate of potassium no permanent precipitate will appear until after this impurity has been neutralized.

Preparation for Homœopathic Use.—One part by weight of pure tartar emetic is dissolved in ninety-nine parts by weight of distilled water.

Amount of drug power, $\frac{1}{100}$.

Dilutions must be prepared as directed under Class V— β .

Triturations of pure tartar emetic are prepared as directed under Class VII.

ANTIRRHINUM LINARIUM, Linn.

Synonym, *Linaria Vulgaris*, Miller and Lindley.

Nat. Ord., Scrophulariaceæ.

Common Name, Common Toad-Flax.

This is a perennial herbaceous plant, from one to two feet high, with numerous narrow linear leaves, and a terminal crowded spike of large yellow flowers. It is a native of Europe, but has been introduced into this country, and now grows in great abundance along the roadsides through the Middle States. It is readily distinguishable by the shape of its leaf, and its conspicuous yellow flowers, which appear in succession from June to October. The plant when fresh has a peculiar, heavy, rather disagreeable odor, which is in a great measure dissipated by drying. The taste is herbaceous, weakly saline, bitter, and slightly acid.

Preparation.—The fresh plant in flower is chopped and pounded

to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, and having poured it into a well-stoppered bottle, it is allowed to stand eight days in a dark cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{8}$.

Dilutions must be prepared as directed under Class III.

APHIS CHENOPODII GLAUCI.

Class, Insecta.

Order, Rhynchota.

Family, Aphidæ.

Common Name, Plant Louse from *Chenopodium Glaucum*.

These lice are found in great abundance upon the oak-leaved goose-foot (*Chenopodium Glaucum*, Linn.), from which they are gathered. The head is small and furnished with a long tubular beak, which is situated perpendicularly between the fore legs. The body is soft, oval, and provided at the posterior extremity with two slightly raised eminences, each of which is pierced by a tube or pore. From time to time there exudes through these orifices, minute drops of a thick, sweetish fluid called honey dew. These insects feed upon the sap contained in the leaves, sucking up the circulating fluids with the greatest avidity, and when gorged with sap, the liquor passes out through the posterior pores as above described.

Preparation.—The live insects, bruised, are covered with five parts by weight of alcohol, poured into a well-stoppered bottle, and allowed to remain eight days in a dark cool place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{8}$.

Dilutions must be prepared as directed under Class IV.

APIS MELLIFICA.

Class, Insecta.

Order, Hymenoptera.

Family, Apidæ.

Common Name, Honey Bee.

This well known insect, living in swarms in the wilds, is also cultivated in proper establishments, to furnish honey and wax, two valuable products of its industry.

Preparation. The live bees, put into a bottle, are irritated by shaking, and then drenched with five times their weight of dilute alcohol, and allowed to remain eight days, being shaken twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{8}$.

Dilutions must be prepared as directed under Class IV, except that dilute alcohol be used for the 2x and 1 dilutions.

APIUM VIRUS.

Poison of the Honey Bee.

Preparation. Draw out the sting together with the poison bag from bees freshly killed. Taking hold of the bag, insert the point of the sting into a small glass-tube and squeeze the poison into it. Or, take a live bee with a pair of pincers and allow it to take hold of a small lump of sugar. It will immediately sting into the sugar which will absorb the poison. Repeat this process until enough is accumulated to start a trituration. This poison is triturated as directed under Class VIII.

APOCYNUM ANDROSÆMIFOLIUM, Linn.

Nat. Ord., Apocynaceæ.

Common Name, Dog's Bane.

This is an indigenous, perennial, herbaceous plant, from three to six feet in height, and abounding in a milky juice, which exudes when the plant is wounded. The stem is erect, smooth, simple below, branched above, usually red on the side exposed to the sun, and covered with a tough fibrous bark. The leaves are opposite, petiolate, ovate, acute, entire, smooth on both sides, and two or three inches long. The flowers are white, tinged with red, and grow in loose, nodding, terminal or axillary cymes. The peduncles have very small acute bracts. The tube of the corolla is longer than the calyx, and its border spreading. The fruit consists of a pair of long, linear, acute follicles, containing numerous imbricated seeds, attached to central receptacle, and each furnished with a seed-down. The plant flourishes in all parts of the United States from Canada to the Carolinas. It is found along fences and the skirts of woods, and flowers in June and July.

Preparation.—The fresh root is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, and having poured it into a well-stoppered bottle, it is allowed to stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

APOCYNUM CANNABINUM, Linn.

Synonym, Apocynum Hypericifolium.

Nat. Ord., Apocynaceæ.

Common Name, Indian Hemp.

In general appearance and character this species bears a close resemblance to the preceding. The stems are herbaceous, erect, branching, of a brown color, and two or three feet in height; the leaves are opposite, oblong-ovate, acute at both ends, and somewhat downy beneath; the cymes are paniculate, many-flowered and pubescent; the corolla is small and greenish, with a tube not longer than the calyx,

and an erect border; the internal parts of the flower are pinkish or purple. The plant grows in similar situations with *A. androsæmifolium*, flowers about the same period, and bears a similar fruit; great care must be taken not to confound these two varieties.

Preparation.—The fresh root is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, and having poured it into a well-stoppered bottle, it is allowed to stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{8}$.

Dilutions must be prepared as directed under Class III.

APOCYNIN.

Resinoid of Apocynum Cannabinum.

Preparation.—The resinoid, as obtained from the chemist, is prepared by trituration as directed under Class VII.

APOMORPHIA.

Synonyms, Apomorphia Hydrochlorate. Apomorphiæ Hydrochloras. Muriate of Apomorphia. Apomorphine.

Formula, $C_{17}H_{17}NO_2$.

Molecular Weight, 267.

Preparation of Apomorphia.—One part of pure morphia and twenty parts of pure hydrochloric acid are introduced into a strong glass tube, having at least fifteen times the capacity of the mixture; the open end is securely sealed, the glass tube introduced into a strong metallic tube closed by a screw-cap, and the whole immersed for three hours in an oil-bath heated to 140° and 150° C. (284° and 302° F.). After cooling, the tube is opened, the liquid diluted with water, and bicarbonate of sodium added in excess. The liquid is decanted from the precipitate, and this is agitated with ether. To the ethereal solution a few drops of hydrochloric acid are added, whereby hydrochlorate of apomorphia is separated; this is recrystallized from boiling water, and then redissolved in a little water, the solution precipitated by bicarbonate of sodium, and the precipitated alkaloid rapidly washed with a little cold water, and dried without delay. In this process chloroform may be used in the place of ether. Apomorphia should be kept in well-stoppered bottles, protected from moisture and light.

Properties and Tests.—Apomorphia is a white or more generally a greyish amorphous powder, which is rather freely soluble in water, and dissolves in ether, benzol, and chloroform. On exposure to the air while still moist, it rapidly turns green, and then dissolves in chloroform with a blue color. Nadler observed that on being precipitated from its solution in sulphuric acid by ammonia, it speedily acquires a reddish-brown color, and yields with chloroform a rose-colored solution. Apomorphia is colored red by nitric acid, brown by iodic acid, and

rose-red by ferric chloride; this last reaction being quite distinct from the blue color produced by the same reagent with morphia.

The salts of apomorphia appear to be slightly soluble in cold water, but more freely so in warm and in acidulated water. The aqueous and alcoholic solutions of the alkaloid and its salts acquire an emerald-green color on exposure to air.

Preparation for Homœopathic Use.—The pure apomorphia is prepared by trituration, as directed under Class VII.

AQUILEGIA VULGARIS, *Linn.*

Natural Order, Ranunculaceæ.

Common Name, Columbine.

This is a perennial herbaceous plant, indigenous to Europe, where it grows in woods, woody low grounds, forests, and on the sides of mountains; but is cultivated in our gardens as an ornamental flower. Its root is branchy, of a deep brown without, white within; the stem is from one to three feet high, thin, branchy, somewhat downy, reddish; the leaves are biternate, of a blue-green beneath, of a deeper color above, incised, indented. The folioles are petiolate, round, rhomboidal or ovoid; the flowers at the edges of the stem and branches are pendant, blue or brown, rarely rosy, disposed in cornets, provided with reflected cornets. The seeds are oval oblong, small, of a shining black, tasting first sweetish, then bitter.

Preparation.—The entire, uncultivated, fresh, blooming plant, is chopped and pounded to a pulp and then weighed. Then two parts by weight of alcohol are taken, and after mixing the pulp thoroughly with one sixth part of it, the rest of the alcohol is added. After having stirred the whole well, and having poured it into a well-stoppered bottle, it is allowed to stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{8}$.

Dilutions must be prepared as directed under Class III.

ARALIA HISPIDA, *Micheaux.*

Synonym, *Aralia Mühlenbergiana.*

Nat. Ord., Araliaceæ.

Common Names, Bristly Sarsaparilla. Wild Elder. Dwarf Elder.

This plant is found growing in rocky places in North America, common northward and southward along the mountains. Its stem is one to two feet high, bristly, leafy, terminating in a peduncle bearing several umbels; leaves twice pinnate; leaflets oblong-ovate, acute, serrate. The flowers are white or greenish, more or less polygamous. Calyx-tube coherent with the ovary, the teeth very short or almost obsolete. Petals five, epigynous, oblong or obovate, lightly imbricated in the bud, deciduous. Stamens five, epigynous, alternate with the petals. Styles two to five, mostly distinct and slender, or in the sterile flowers short and united. Ovary two to five celled, with a single

anatropous ovule suspended from the top of each cell, ripening into a berry-like drupe, with as many seeds as cells. Flowers in June.

Preparation.—The fresh root is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, and having poured it into a well-stoppered bottle, it is allowed to stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{6}$.

Dilutions must be prepared as directed under Class III.

ARALIA RACEMOSA, Linn.

Nat. Ord., Araliaceæ.

Common Name, American Spikenard.

This is an indigenous plant, growing in rich woodlands. Herbaceous; stem widely branched; leaflets heart-ovate, pointed, doubly serrate, slightly downy; umbels racemose; styles united. There are traces of stipules at the dilated base of the leaf-stalks. The plant is well known for its spicy aromatic large roots. Its greenish-white flowers appear in July.

Preparation.—The fresh root is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and after thoroughly mixing the pulp with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, and having poured it into a well-stoppered bottle, it is allowed to stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{6}$.

Dilutions must be prepared as directed under Class III.

ARANEA DIADEMA, Linn.

Synonym, Epeira Diadema.

Class, Arachnida.

Order, Araneidea.

Family, Epeiridæ.

Common Names, Diadem Spider. Garden or Papal Cross Spider.

This spider is found all over Europe and America, in stables, on old walls, etc. It may be distinguished by its ovoid form of body, often as large as a small nut; a longitudinal line on the back, composed of yellow and white points, and traversed by three other similar lines.

Preparation.—The live animal is crushed and covered with five parts by weight of alcohol. Having poured this into a well-stoppered bottle, it is allowed to remain eight days in a dark, cool place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Amount of drug power, $\frac{1}{16}$.

Dilutions must be prepared as directed under Class IV.

ARANEA SCINENCIA.

Class, Arachnida.

Order, Araneidea.

Family, Epeiridae.

This spider was proved by Dr. Rowley, Louisville, Kentucky, and the proving published in *North American Journal of Homœopathy*, vol. vii., p. 65. He says: "It is a grey spider found in the summer on walls and old places. I believe it does not spin a web; it is very quick in its movements, and takes its prey by a quick spring."

Preparation.—The live animal is covered with five parts by weight of alcohol and allowed to remain eight days in a well-stoppered bottle in a dark, cool place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Amount of drug power, $\frac{1}{16}$.

Dilutions must be prepared as directed under Class IV.

ARCTIUM LAPPA, Linn.Synonyms, Lappa Major, *Gartner*. Lappa officinalis.

Natural Order, Compositæ.

Common Name, Burdock.

This is a biennial, with a simple spindle-shaped root, a foot or more in length, brown externally, white and spongy within, furnished with thread-like fibres, and having withered scales near the summit. The stem is succulent, pubescent, branching, and three or four feet in height, bearing very large cordate, denticular leaves, which are green on their upper surface, whitish and downy on the under, and stand on long footstalks. The flowers are purple, globose, and in terminal panicles. The calyx consists of imbricated scales, with hooked extremities, by which they adhere to clothes, and the coats of animals. The seed-down is rough and prickly, and the seeds quadrangular. This plant is a native of Europe, and is abundant in the United States, where it grows on the roadsides, among rubbish, and in cultivated grounds.

Preparation.—The fresh root, collected in spring, is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp with one sixth part of it, the rest of the alcohol is added. After having stirred the whole well, and having poured it into a well-stoppered bottle, it is allowed to stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{8}$.

Dilutions must be prepared as directed under Class III.

ARGENTUM.

Synonyms, Argentum Metallicum. Argentum Purificatum.
Argentum Foliatum. Metallic Silver.

Common Name, Silver.

Symbol, Ag.

Atomic Weight, 108.

Origin.—This metal is found pure, and in combination with various other metals, and with sulphur, chlorine, bromine, iodine, etc., the richest silver ores being in Germany, Norway, Peru, Mexico, and the Western United States.

Preparation of Silver.—The extraction of the metal is effected by different processes, the details varying considerably with the richness and the composition of the ore. The process of *amalgamation* is based upon the formation of an alloy between metallic mercury and silver. The finely powdered ore is intimately mixed with chloride of sodium, and then roasted, when the mass contains, besides metallic silver, its chloride; the latter being converted to the metallic state by agitation in a revolving cylinder with water and iron. Mercury is now added and the agitation continued, when the silver, gold and copper unite with the mercury, the amalgam being obtained by subsidence and washing, and afterwards separated into a liquid and solid portion by subjecting it to pressure in strong linen or leather bags. By distilling the solid portion, the mercury is evaporated off and recovered, while the silver remains behind, containing copper and gold.

In the process of *cupellation*, the galena containing silver is first reduced, and the metallic lead allowed to cool slowly, when almost pure lead crystallizes, and is removed by means of a ladle, or by carefully draining off the liquid portion, which is rich in silver. It is exposed to a red heat, and air directed upon it by means of a blast, whereby the lead is oxidized, and the litharge blown off, leaving silver containing some lead. This is now transferred to a dish made of bone-ashes, and heated to redness, the plumbic oxide formed is absorbed by the porous vessel, and finally, almost chemically pure silver is left.

Many modifications of these and some other processes are employed, the silver obtained on the large scale always retaining a small portion of other metals.

Chemically Pure Silver is obtained in various ways from the chloride, which is readily prepared free from other chlorides by precipitating the solution in nitric acid with hydrochloric acid, and washing it thoroughly with water. The chloride of silver is then reduced by boiling it with glucose and carbonate of sodium; the precipitated silver thus obtained is well washed with acetic acid and water.

Properties.—Silver is a brilliant white metal, very ductile and malleable, having the specific gravity 10.47 when obtained by fusion; the pressed and distilled silver have a density of 10.57. It does not oxidize in contact with the air at a red or white heat, and distills at the heat of the oxyhydrogen blast. It tarnishes superficially through the sulphuretted hydrogen contained in the atmosphere, and dissolves completely in diluted nitric acid.

Tests.—The solution of chemically pure silver in hot diluted nitric acid, when precipitated by hydrochloric acid, yields a filtrate, which is not darkened by hydrosulphuric acid, and on evaporation to dryness leaves no residue.

Preparation for Homœopathic Use.—Chemically pure silver, obtained in powder, as described above, is prepared by trituration, as directed under Class VII.

ARGENTUM NITRICUM.

Synonyms, Argenti Nitras. Nitrate of Silver.

Present Name, Argentic Nitrate.

Common Name, Lunar Caustic.

Formula, Ag NO_3 .

Molecular Weight, 170.

Preparation of Nitrate of Silver.—Take of silver in small pieces two troy ounces; nitric acid two troy ounces and a half; distilled water a sufficient quantity. Mix the acid with a fluid ounce of distilled water in a porcelain capsule, add the silver to the mixture, cover it with an inverted glass funnel, resting within the edge of the capsule, and apply a gentle heat until the metal is dissolved, and red vapors cease to be produced; then remove the funnel, and, increasing the heat, evaporate the solution to dryness. Melt the dry mass, and continue the heat, stirring constantly with a glass rod, until free nitric acid is entirely dissipated. Dissolve the salt, when cold, in six fluid ounces of distilled water, allow the insoluble matter to subside, and decant the clear solution. Mix the residue with a fluid ounce of distilled water, filter through paper, and, having added the filtrate to the decanted solution, evaporate the liquid until a pellicle begins to form, and set it aside in a warm place to crystallize. Lastly, drain the crystals in a glass funnel until dry, and preserve them in a well-stoppered bottle.

Properties.—Nitrate of silver exists in colorless shining tabular crystals of the rhombic system, which have a strongly metallic taste, and are freely soluble in water and in four parts of boiling alcohol. They fuse at a temperature of 198°C . (388.4°F .), and decompose at a low red heat, but are permanent in the air and light, except in the presence of organic matter whereby they require a dark color. The alcoholic solution, when exposed to the light, is gradually reduced, silver being separated. Hydrochloric acid produces in the solution a white curdy precipitate of argentic chloride, which is insoluble in dilute nitric acid, but dissolves readily in ammonia. Stains produced by nitrate of silver upon the skin are removed by rubbing them with a strong solution of cyanide of potassium, or by moistening them first with a solution of iodine and afterwards with hyposulphite of sodium. Nitrate of silver contains no water of crystallization.

Tests.—Ten grains of nitrate of silver dissolved in distilled water, give with hydrochloric acid a precipitate which, after washing and drying, weighs 8.44 grains. The solution of nitrate of silver, when precipitated by an excess of hydrochloric acid, yields a filtrate which is not colored by hydrosulphuric acid, and, when evaporated, leaves no residue; copper, lead, and alkalies are thus readily detected.

Preparation for Homœopathic Use.—One part by weight of pure nitrate of silver is dissolved in nine parts by weight of distilled water.

Amount of drug power, $\frac{1}{10}$.

Dilutions must be prepared as directed under Class V—*a*, except that distilled water is used for the 1x, 2x and 3x and 1 dilutions, and

dilute alcohol for the 4x and 2 dilutions, strong alcohol being used for all further attenuations.

Dilutions should be freshly made as required for use.

NOTE.—Nitrate of silver ought not to be prepared by trituration, on account of its action on organic matter.

ARISTOLOCHIA CLEMATITIS, Linn.

Synonym, *Aristolochia vulgaris*.

Nat. Ord., Aristolochiaceæ.

Common Names, Long Birth-wort. Aristolochy.

The common aristolochia is a perennial, growing near hedges, ditches and vineyards, indigenous to Southern Europe. Its root is very long, cylindrical, as thick as a goosequill or thicker, variously contorted, beset with the remains of the stems and radicals, of a grayish-brown color, a strong peculiar odor, and an acrid bitter taste. The stems are erect, from two to four feet high, simple, smooth, striped, set with alternately long-petiolate, cordate, entire, vivid green, above gray-green, below leather-like leaves. The short-petiolate yellow flowers stand four to eight in the axils.

Preparation.—The fresh root, gathered in April or September, is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well and having poured it into a well-stoppered bottle, it is allowed to stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{6}$.

Dilutions must be prepared as directed under Class III.

ARISTOLOCHIA MILHOMENS, Nobis.

Synonyms, *Aristolochia Grandiflora*, Gom. *Aristolochia Cymbifera*, Martius.

Nat. Ord., Aristolochiaceæ.

Common Name, Brazilian Snake-Root.

A climbing plant with a glabrous stem; leaves alternate, uniformly cordate, pedati-nerved, with reticulate little veins between the nerves; they are supported by long petioles, furnished with a large, entire, reni-form, amplexicaul stipule. Flowers solitary, upon a sulcate peduncle from four to five inches long. Perianth single, large, of a yellowish-brown color, tuberculated, curved, divided into two lips; the upper lip sharp, lanceolate, and somewhat bent outwards; the lower lip twice as long as the other, at first dilated at the base and expanding into a large oval disk with undulate borders. The whole flower is covered with prominent nerves. Stamens six, epigynous. Ovary glabrous, surmounted by a stigma with six short and rounded lobes.

Preparation.—The fresh flowers are pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp with one-sixth part of it the rest of the alcohol is

added. After having stirred the whole well, and having poured it into a well-stoppered bottle, it is allowed to stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{8}$.

Dilutions must be prepared as directed under Class III.

ARMORACIA.

Synonym, *Cochlearia Armoracia*, *Linn.*

Nat. Ord., Cruciferae.

Common Names, Horse-radish. Crow-flowers.

The horse-radish is a native of western Europe, growing wild on the sides of ditches and in other moist situations. It is cultivated for culinary purposes in most civilized countries. The root of this plant is perennial, sending up numerous very large leaves, from the midst of which a round, smooth, erect, branching stem rises two or three feet in height. The radical leaves are lance-shaped, waved, scalloped on the edges, sometimes pinnatifid, and stand upon strong footstalks. Those of the stem are much smaller, without footstalks, sometimes divided at the edges, sometimes almost entire. The flowers are numerous, white, peduncled, and form thick, terminal clusters.

Preparation.—The fresh root taken out in autumn after being cleaned is immediately comminuted with a grater and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, pour it into a well-stoppered bottle and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{8}$.

Dilutions must be prepared as directed under Class III.

ARNICA.

Synonym, *Arnica Montana*, *Linn.*

Nat. Ord., Compositae.

Common Names, Arnica. Leopards-bane.

This is a perennial, herbaceous plant, having a woody, brownish, horizontal root, from one to three inches long, and two or three lines thick, ending abruptly, and sending forth numerous slender fibres of the same color. The stem is about a foot high, cylindrical, striated, hairy, and terminating in one, two, or three peduncles, each bearing a flower. The radical leaves are ovate, entire, ciliated and obtuse, those of the stem, which usually consist of two opposite pairs, are lance-shaped. Both are of a bright green color, and somewhat pubescent on their upper surface. The flowers are very large and of a fine orange-yellow color. The calyx is greenish, imbricated, with lanceolate scales. The ray consists of about fourteen ligulate florets, twice as long as the calyx, striated, three-toothed, and hairy at the base; the disk of tubular florets with a five-lobed margin. The whole plant, when fresh, has a

strong, disagreeable odor, which is apt to excite sneezing, and is diminished by drying. The taste is acrid, bitterish and lasting. This plant is a native of the mountainous districts of Europe and Siberia.

Preparation.—At the time of blooming, gather besides the root, which is the most important part, also the root-leaves, and full-blown flowers, which latter are to be taken out of the calyx, to remove the larvæ of the *MUSCA ARNICÆ* from the receptacle. Two parts of the root, one part of the herb, and one part of the flowers are pounded together to a fine pulp and weighed. Then two parts by weight of alcohol are taken, and after thoroughly mixing the pulp with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, and having poured it into a well-stoppered bottle, it is allowed to stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{6}$.

Dilutions must be prepared as directed under Class III.

ARNICA E RADICE.

Root of Arnica Montana.

Preparation.—The fresh root carefully dried and pulverized, is covered with five parts by weight of alcohol, and allowed to remain eight days, in a well-stoppered bottle, in a dark, cool place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{16}$.

Dilutions must be prepared as directed under Class IV.

ARSENICUM ALBUM.

Synonyms, Acidum Arseniosum. Arsenious Acid.

Present Name, Arsenious Anhydrid.

Common Name, White Arsenic.

Formula, $As_2 O_3$.

Molecular Weight, 198.

Preparation of Arsenious Acid.—Arsenious acid is obtained in large quantities as a by-product in roasting cobalt, nickel, tin, and even some silver ores, and particularly arsenical iron pyrites; the vapors are conducted through long tubes or chambers, where they are condensed in the form of a white powder, formerly called *flowers of arsenic*. This is not pure, but contains some metallic arsenic, sulphide of arsenic, dirt, etc., from which it is purified by resublimation. For this purpose, the crude powder is introduced into cast-iron kettles, surmounted by several communicating iron cylinders, from the top of which a large pipe leads into a chamber where the vapors, which are not condensed in the cylinders, are recovered again as a white powder. The heat, which is applied directly to the kettle, is sufficient to keep the condensing product in the heads in a soft condition, so that on cooling, it congeals into masses. If the heat is raised too high, the greater portion of the acid is carried over into the chamber. That consumed in this country is mostly imported from Europe; during the year end-

ing June 30, 1876, over 506,000 lbs., and in the following year 2,595,000 lbs., were imported into the United States.

Properties.—Arsenious acid occurs in heavy, inodorous masses, which are at first glass-like and transparent, but become superficially white and opaque, the change penetrating gradually to the interior, so that ultimately the entire mass is converted into a porcelain-like mass, the formation of which is dependent upon a molecular change, the amorphous glass-like arsenious acid becoming crystalline. The specific gravity of the vitreous acid is 3.7385, and of the opaque variety 3.699 (Guibourt). Durand and Mitchell determined (1832) the density of the former to be about 3.3. Slowly heated in a glass tube to about 200° C. (392° F.), minute transparent crystals are obtained which, under a magnifying-glass, are recognized as regular octahedra. It is dimorphous, crystallizing also in thin pearly crystals, which are sometimes obtained in the process of roasting arsenical ores. When thrown upon burning charcoal, it is reduced to the metallic state and vaporized, arsenious acid being again produced, and an alliaceous odor emitted. It has a scarcely perceptible, faintly sweetish taste, due to its slow and sparing solubility; the crystalline acid is less soluble than the amorphous, but one is under various circumstances converted into the other. By prolonged contact with cold water, about $\frac{1}{4}$ per cent. of the acid is dissolved, but after boiling for several hours, about 11 per cent. is taken up, the greatest portion crystallizing on cooling, leaving about 2½ per cent. in the solution. Treated with warm or cold ammonia water, the amorphous acid is converted in the crystalline variety without combining with the ammonia (Guibourt). Arsenious acid is insoluble in ether, quite sparingly soluble in alcohol, but combines with fixed oils when heated, forming a plaster-like mass; several acids increase its solubility in water, particularly hydrochloric and tartaric acids.

Powdered arsenious acid is often adulterated; hence it should not be employed for medicinal purposes unless its purity has been previously established. When rubbing the hard masses of vitreous or porcelain-like acid to powder, sufficient alcohol should be sprinkled over it to prevent the dust from rising, and the mouth and nostrils should be protected by a moist sponge. When larger quantities are powdered, it is even advisable to protect the eyes and the bare hands.

Tests.—Arsenious acid is completely volatilized without fusion at a temperature not exceeding 204.5° C. (400° F.). By prolonged boiling with diluted hydrochloric acid, it dissolves completely without leaving any residue, and 100 grains of it, thus dissolved, yield with hydrosulphuric acid a deposit of tersulphide of arsenic weighing, after washing and drying, 124 grains. Four grains of it, dissolved in boiling water with 8 grains of bicarbonate of sodium, discharge the color of 808 grain-measures of the volumetric solution of iodine. The reaction occurring in this test is shown by the equation: $As_2O_3 \cdot 5H_2O + 2I_2 = 2H_3AsO_4 + 4HI$; one molecular weight of arsenious acid is oxidized by four atomic weights of iodine, with the formation of two molecules of arsenic and four of hydriodic acid.

Detection of Arsenic and Arsenious Acid.—A neutral or acidulated solution of arsenic yields with sulphuretted hydrogen a bright yellow precipitate of *sulphide of arsenic*, which is entirely insoluble in dilute acids, but dissolves readily in alkalies, their carbonates and sulphides; if such a solution in sulphhydrate of ammonium is acted upon by nitrate of silver in excess, sulphide of silver is precipitated, and the solution contains the arsenic in its original state of oxidation, either as arsenious or arsenic acid, and on the careful neutralization of the ammonia by means of nitric acid, the former is precipitated as yellow arsenite of silver, and the latter as red-brown arseniate of silver, both precipitates being readily soluble in nitric acid and in ammonia. Neutral solutions of arsenious and arsenic acids yield with sulphate of copper precipitates, that of the former being yellowish-green (Scheele's green), and of the latter bluish-green in color; both precipitates are freely soluble in nitric acid and in ammonia. It follows, from the behavior just described, that in testing by a soluble silver or copper salt for arsenious or arsenic acid, the solution of the latter must be very carefully neutralized, or, if acid, are best tested with ammoniacal solutions of copper and silver; but the complete precipitation of arsenic is most conveniently effected from an acidulated solution by means of sulphuretted hydrogen gas; if strongly acid, the liquid should be diluted with water, and it is in all cases advisable, after adding an excess of the gas, to set the mixture aside for some time, if little arsenic is present, even for 24 hours. If not mixed with other metals, the precipitate thus obtained is pretty characteristic, since only two other metals yield under the same circumstances precipitates of sulphides having a similar color, namely, *cadmium* and *tin* in *stannic* compounds. *Cadmium sulphide* has a bright lemon-yellow color, but is readily distinguished from the corresponding arsenic compound by being completely insoluble in potassa, ammonia and sulphhydrate of ammonium; on the other hand, cadmium sulphide dissolves completely in strong hydrochloric acid, forming cadmium chloride, and giving off sulphuretted hydrogen, while sulphide of arsenic is insoluble in the acid mentioned. *Stannic sulphide* has a dusky-yellow color, and dissolves in potassa, ammonia and sulphhydrate of ammonium, but differs from sulphide of arsenic not only in the shade of color but also in its complete solubility in strong hydrochloric acid. The three sulphides may likewise be distinguished from each other by their behavior with *cyanide flux*, which is an intimate mixture of one part of cyanide of potassium with three parts of anhydrous sodium carbonate; when heated with this flux in the bulb of a Berzelius reduction tube, sulphide of arsenic yields, in the cooler part of the tube, a sublimate of metallic arsenic having an iron-gray color, and in the upper portion of the ring occasionally a brown color, produced by the intimate mixture of metallic arsenic with some arsenious acid; during the sublimation a garlic-like odor is observed; the sublimate volatilizes on the application of heat, and condenses again in a cooler part of the tube, and if atmospheric air has been admitted, is partly or entirely converted into minute brilliant octahedral crystals of arsenious acid. Sulphide of cadmium, under the same circumstances, yields a red-

brown sublimate, consisting of oxide of cadmium, which is not volatilized by heat; and sulphide of tin produces no sublimate; but in the fused mass will be found metallic grains of tin.

The above tests characterize arsenic if in the form of solution, and if present in more than a very minute quantity. Arsenious acid, which is usually met with in cases of accidental or criminal poisoning, yields, if heated in a narrow tube, the crystalline sublimate described above; and if mixed with charcoal or cyanide flux, the sublimate will, as in the above case, consist of metallic arsenic, and this, on being sublimed in the presence of air, will yield the same crystals.

In the presence of much organic matter, the detection of arsenic is a more complicated process, involving the separation of most of the organic matter.

Preparation for Homœopathic Use.—One part of finely powdered, vitreous arsenious acid is boiled to complete solution in sixty parts of distilled water, and filtered. By an addition of distilled water the filtrate is increased to ninety parts, to which ten parts of 95 per cent. alcohol are then added.

Amount of drug power, $\frac{1}{100}$.

Dilutions must be prepared as directed under Class VI— β .

Triturations are prepared of finely powdered vitreous arsenious acid, as directed under Class VII.

ARSENICUM CHLORICUM.

Synonym, Liquor Arsenici Chloridi (Solution of Chloride of Arsenic).

Common Name, Chloride of Arsenic.

Preparation of Chloride of Arsenic.—Take of arsenious acid in small pieces sixty-four grains; muriatic acid two fluidrachms; distilled water a sufficient quantity. Boil the arsenious acid with the muriatic acid and four fluid ounces of distilled water, until the arsenious acid is entirely dissolved, and, when the solution is cold, add enough distilled water to make it measure thirteen ounces and two and two-third drachms.

Properties and Tests.—The solution is colorless, and has an acid reaction. Sulphuretted hydrogen yields at once a bright yellow precipitate of sulphide of arsenic.

Preparation for Homœopathic Use.—The above preparation represents the amount of drug power $\frac{1}{100}$.

Dilutions must be prepared as directed under Class V— β .

ARSENICUM CITRINUM.

Synonyms, Arsenicum Sulfuratum Flavum. Orpiment.

Present Name, Arsenious Sesqui-Sulphide.

Common Name, King's Yellow.

Formula, $As_2 S_3$.

Molecular Weight, 123.

Origin and Preparation of Orpiment.—This metallic substance is native in Hungary, Servia, and Wallachia, and the Levant. It may

be prepared by passing sulphuretted hydrogen through a solution of arsenicum album in dilute hydrochloric acid, and washing the precipitate thoroughly.

Properties and Tests.—The native tersulphuret of arsenic consists of one eq. of metal 75, and three eqs. of sulphur 48 = 123. It is in masses of a brilliant lemon-yellow color, composed of flexible laminae, and slightly translucent. It is insoluble in hydrochloric acid, but soluble in sulphide of ammonium, and in boiling dilute nitric acid, with separation of sulphur.

Preparation for Homœopathic Use.—The pure arsenious sulphide is prepared by trituration, as directed under Class VII.

ARSENICUM HYDROGENISATUM.

Synonym, Arsenetted Hydrogen.

Present Name, Trihydride of Arsenic.

Formula, As H₃.

Preparation of Arsenetted Hydrogen.—This is prepared by fusing metallic arsenic with its own weight of granulated zinc, and decomposing the alloy with strong hydrochloric acid.

Properties and Tests.—It is a very poisonous colorless gas, with a strong garlic smell, burning with a blue flame if ignited, depositing metallic arsenic on the sides of a cool tube held over the flame.

Preparation for Homœopathic Use.—The provings were made by inhaling the gas diluted with atmospheric air. To use this gas as a remedy, dissolve the freshly prepared gas in ice-cold distilled water, which absorbs one-fifth of its volume. This saturated solution mixed with an equal quantity of distilled water produces the 1x dilution.

Further dilutions must be prepared as directed under Class V—*a*, except that distilled water be used for all dilutions.

ARSENICUM JODATUM.

Synonym, Arsenici Jodidum.

Present Name, Arsenious Iodide.

Common Name, Iodide of Arsenic.

Formula, As I₃.

Molecular Weight, 456.

Preparation of Iodide of Arsenic.—Take of arsenic sixty grains; iodine three hundred grains. Rub the arsenic in a mortar until reduced to a fine powder; then add the iodine, and rub them together until they are thoroughly mixed. Put the mixture into a small flask or test-tube, loosely stopped, and heat it very gently until liquefaction occurs. Then incline the vessel in different directions, in order that any portion of the iodine which may have condensed on its surface may be returned into the melted mass. Lastly, pour the melted iodide on a porcelain slab, and, when it is cold, break it into pieces, and keep it in a well-stoppered bottle.

Properties.—Obtained by sublimation, as directed above, it appears in shining brick-red scales. It is soluble in boiling alcohol, crys-

tallizing on cooling, dissolves completely in water, and volatilizes by heat without leaving any residue.

Preparation for Homœopathic Use.—The pure iodide of arsenic is prepared by trituration, as directed under Class VII.

ARSENICUM METALLICUM.

Synonym, Metallic Arsenic.

Symbol, As.

Atomic Weight, 75.

Origin and Preparation of Metallic Arsenic.—Arsenic, which is classed by some chemists with the metals, by others with the non-metallic elements, is widely diffused in nature, but it is found usually in small quantities. It exists in the uncombined state as *native arsenic*, known also under the name of *cobaltum* or *flystone*; but more frequently in combination with sulphur and sulphides, as *red orpiment* or *realgar*, As_2S_2 ; *yellow orpiment*, As_2S_3 ; *arsenical pyrites*, or *mispickel*, FeS_2 , FeAs_2 ; *cobalt-glance*, CoS_2 , CoAs_2 ; *tin-white cobalt*, CoAs_2 ; and in other minerals.

On heating arsenical pyrites in earthen cylinders, most of the arsenic volatilizes and is collected in iron receivers where it congeals. It is obtained on a small scale by mixing arsenious acid with half its weight of powdered charcoal, introducing the mixture into a crucible, covering it with a layer of granular charcoal two or three inches thick, and cementing over the crucible in an inverted position another one having a small hole drilled through the bottom; on heating the crucible the arsenious acid is reduced to arsenic, which sublimes, carbonic oxide escaping: $\text{As}_2\text{O}_3 + \text{C}_3$ yields $\text{As}_2 + 3\text{CO}$.

Properties.—It is a brittle steel-gray mass having a bright metallic lustre, gradually changing on exposure to the air to a grayish-black color devoid of gloss. Its specific gravity is 5.88 to 5.96. Heated in a sealed tube it fuses, but if heated in the open air it volatilizes without melting at a temperature of 180°C . (366°F .), a portion of it being oxidized to arsenious acid. When immersed in water, the air dissolved in the latter oxidizes a portion to arsenious acid, which explains the use of cobaltum as a fly poison. Metallic arsenic dissolves on heating in some fixed oils, and unites readily with most of the metals, with sulphur, chlorine, iodine, and other elements.

Tests.—For tests and the detection of arsenic see *Arsenicum Album*.

Preparation for Homœopathic Use.—The pure metallic arsenic is prepared by trituration, as directed under Class VII.

ARSENICUM RUBRUM.

Synonyms, *Arsenicum Sulfuratum Rubrum*. Arsenic Bisulphide.

Present Name, Arsenious Sulphide.

Common Names, Realgar. Sandarach.

Formula, As_2S_2 .

Molecular Weight, 107.

Origin.—This metallic substance is native to Saxony, Bohemia, Transylvania, and in various volcanic regions.

Properties and Tests.—The native bisulphuret of arsenic consists of one eq. of arsenic 75, and two eqs. of sulphur $32=107$. It occurs in transparent crystals of different forms, of an orange-red color, answering to the same tests as orpiment (*Arsenicum Citrinum*).

Preparation for Homœopathic Use.—The pure arsenious sulphide is prepared by trituration, as directed under Class VII.

ARTEMISIA VULGARIS, Linn.

Nat. Ord., Compositæ.

Common Names, Mugwort. Common Artemisia.

This perennial plant, growing wild in all parts of Europe, is rather well known; it differs from its next and most spread relation *Artemisia Absinthium*, by the dark green and quite smooth surface of its leaves and the mostly quite smooth and very stiff stalks, which look frequently as if covered with dark violet brown or purple color. It should not be mistaken for *Artemisia Campestris* mingled with which it often occurs; the latter having a more spare growth, attenuated branches decumbent until the flowering time, and quite narrow, linear, setaceous leaves.

Preparation.—The fresh root is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one sixth part of it, the rest of the alcohol is added. After having stirred the whole well, and having poured it into a well-stoppered bottle, it is allowed to stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{8}$.

Dilutions must be prepared as directed under Class III.

ARUM MACULATUM, Linn.

Synonyms, Arum Vulgare. Aronis Communis.

Nat. Ord., Araceæ.

Common Names, Wake Robin. Cuckoo-pint. Spotted Arum.

This is a perennial herbaceous plant in forests of leaved woods of middle and southern Europe. The arrow-shaped, long-petiolate, abruptly pointed leaves are smooth and not seldom sprinkled with grey-black irregular spots; the scape is naked, shorter than the petiole, and bears a large white sheath, from which a round, club-shaped, reddish spadix juts out. The white root, as large as a hazelnut, is roundish, set with fibrils, fleshy and has an extremely acrid smell, irritating the eyes and nose especially when bruised, and a similar burning taste.

Preparation.—The fresh root, gathered in early spring before the development of the leaves, is carefully chopped and pounded to a fine pulp, and pressed out *lege artis* in a piece of new linen. The expressed juice is then, by brisk agitation, mixed with an equal part by weight of alcohol. This mixture is allowed to stand eight days in a dark, cool place, and then filtered.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class I.

ARUM TRIPHYLLUM, *Linn.*

Synonyms. *Arisæma Triphyllum*, *Torrey*. *Arum Atrorubens*.

Nat. Ord., Araceæ.

Common Names. Indian Turnip. Jack in the Pulpit. Dragon's Root.

This indigenous plant has a perennial root or cormus, which, early in spring, sends up a large, ovate, acuminate, variously colored spathe, convoluted at bottom, flattened and bent over at top like a hood, and supported by an erect, round, green or purplish scape. Within the spathe is a club-shaped spadix, green, purple, black, or variegated, rounded at the end, and contracted near the base, where it is surrounded by the stamens or germs in the dioecious plant, and by both in the monoecious, the female organs being below the male. The spathe and upper portions of the spadix gradually decay, while the germs are converted into a compact bunch of shining scarlet berries. The leaves, usually one or two in number, and upon long sheathing footstalks, are composed of three ovate acuminate leaflets, paler on their under than their upper surface, and becoming glaucous as the plant advances. This plant is a native of North and South America, and is common in all parts of the United States, growing in damp woods, in swamps, along ditches, and in other moist shady places. The root is roundish, flattened, an inch or two in diameter, covered with a brown, loose, wrinkled epidermis, and internally white, fleshy, and solid. When fresh, it has a peculiar odor, and is violently acrid, producing, when chewed, an insupportable burning and biting sensation in the mouth and throat, which continues for a long time and leaves an unpleasant soreness behind. The acrid principle is extremely volatile, and is entirely driven off by heat.

Preparation.—The fresh root, gathered in early spring before the development of the leaves, is carefully bruised (as it irritates the eyes and nose) and weighed. Then two parts by weight of alcohol are taken, and after thoroughly mixing the pulp with one sixth part of it, the rest of the alcohol is added. After having stirred the whole well, and having poured it into a well-stoppered bottle, it is allowed to stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering. It must be kept well guarded against light and heat.

Drug power of tincture, $\frac{1}{4}$.

Dilutions must be prepared as directed under Class III.

Triturations. Dr. E. M. Hale recommends a rapid trituration of the expressed juice of the freshly gathered root, on the decimal scale, the preparation to be preserved in hermetically sealed bottles, guarded against light and heat.

ARUNDO MAURITANICA, *Desfontaines*.**Nat. Ord.**, Gramineæ.**Common Name**, Reed.

An Italian grass.

Proved and introduced by Dr. F. Patti, Chazon a Duc de Sorentino; published in *Journ. de la Soc. Gall.*, Vol. VII, 1856.

Preparation for Homœopathic Use.—The fresh root-sprout is pounded to a fine pulp and weighed. Then two parts by weight of alcohol are taken, and after thoroughly mixing the pulp with one-sixth part of it, the rest of alcohol is added. After having stirred the whole well, and poured it into a well-stoppered bottle, it is allowed to stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{8}$.

Dilutions must be prepared as directed under Class III.

ASAFŒTIDA.

Synonyms, *Narthex Asafoetida*, *Falconer*. *Ferula Asafoetida*, *Linn.* *Ferula Persica*. *Asafoetida Disgunensis*.

Nat. Ord., Umbelliferae.**Common Names**, Asafoetida. Devil's Dung.

This is a native of Persia, Afghanistan and other neighboring regions. The root is perennial, fleshy, tapering, simple or divided, a foot or more in length, about three inches thick at top, where it is invested above the soil with numerous small fibres, dark-gray and transversely corrugated on the outside, internally white and abounding in an excessively fetid, opaque, milky juice. The leaves, which spring from the root, are numerous, large and spreading, nearly two feet long, light-green above, paler beneath, and of a leathery texture. From the midst of the leaves rises a luxuriant, herbaceous stem, from six to nine feet high, two inches in diameter at the base, simple, erect, round, smooth, striated, solid, and terminating in a large head of compound umbels, with from ten to twenty rays, each surmounted by a roundish partial umbel. The flowers are pale-yellow and the fruit oval, thin, flat, foliaceous and reddish-brown.

Preparation.—The gum-resin, obtained by incision, from the living root, from plants more than four years old, is covered with five parts by weight of 95 per cent. alcohol, and having poured it into a well-stoppered bottle, it is allowed to remain eight days in a dark, cool place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{16}$.

Dilutions must be prepared as directed under Class IV, except that 95 per cent. alcohol is used.

ASARUM.

Synonyms. *Asarum Europæum*, Linn. *Asarum Vulgare*. *Nardum Rusticanum*.

Nat. Ord., Aristolochiaceæ.

Common Names. *Asarabacca*. European Snake-Root. Fole's Foot. Hazel-wort. Wild Nard.

The hazel-wort grows all over Germany, also in all other parts of Europe, in shady, elevated forests, under small bushes, especially under hazel-bushes. The root is creeping, of the thickness of a straw, five to six inches long, geniculated, bent hither and thither, in some places knotty and set with thick fibres; the stalks, scarcely one inch high, villous, somewhat decumbent, end in two leaves, sitting on petioles three to four lines long, being reniform, entire, above shining dark-green, below grayish-green, run through with net-like veins, and sometimes set with slender hair, from the partition of which the short petiole, externally villous, green-red, internally dark purple flower arises.

Preparation.—The entire fresh plant, gathered when in flower, is chopped and pounded to a fine pulp, and pressed out *lege artis* in a piece of new linen. The expressed juice is then, by brisk agitation, mingled with an equal part by weight of alcohol. This mixture is allowed to stand eight days in a well-stoppered bottle, in a dark, cool place, and then filtered.

Drug power of tincture, $\frac{1}{4}$.

Dilutions must be prepared as directed under Class I.

ASARUM CANADENSIS, Linn.

Nat. Ord., Aristolochiaceæ.

Common Names. Wild Ginger. Canada Snake-root. Indian Ginger. Kidney-leaved *Asarabacca*.

This is an indigenous plant, inhabiting woods and shady places from Canada to the Carolinas. In appearance and botanical character this species very closely resembles *Asarum Europæum*. It has a long, creeping jointed, fleshy, yellowish root or rhizoma, furnished with radicles of a similar color. The stem is very short, dividing, before it emerges from the ground, into two long round hairy leafstalks, each of which bears a broad kidney-shaped leaf, pubescent on both surfaces, of a rich shining light green above, veined and pale or bluish beneath. A single flower stands in the fork of the stem, upon a hairy pendulous peduncle.

Preparation.—The fresh root is chopped and pounded to pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well and having poured it into a well-stoppered bottle, it is allowed to stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{4}$.

Dilutions must be prepared as directed under Class III.

ASCLEPIAS INCARNATA, *Linn.***Synonym**, *Amæna*.**Nat. Ord.**, *Asclepiadaceæ*.**Common Names**, Flesh-colored *Asclepias*. Flesh-colored Swallow-wort. Rose-colored Silk Weed. Swamp Milk or Silk Weed. White Indian Hemp.

This species has an erect downy stem, branched above, two or three feet high, and furnished with opposite, nearly sessile, lanceolate, somewhat downy leaves. The flowers are red, sweet-scented, and disposed in numerous crowded erect umbels, which are generally in pairs. The nectary is entire with its horn exerted. The plant grows in all parts of the United States, preferring a wet soil, and flowering from June to August. Upon being wounded it emits a milky juice.

Preparation.—The fresh root is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, and having poured it into a well-stoppered bottle, it is allowed to stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{4}$.

Dilutions must be prepared as directed under Class III.

ASCLEPIAS SYRIACA, *Linn.***Synonym**, *Asclepias Cornuti*, *Decaisne*.**Nat. Ord.**, *Asclepiadaceæ*.**Common Names**, Silk Weed. Milk Weed. Virginian Swallow-wort.

The silk weed has simple stems, from three to five feet high, with opposite, lanceolate-oblong, petiolate leaves, downy on their under surface. The flowers are large, of a pale purple color, sweet-scented, and arranged in two or three nodding umbels. The nectary is bidentate. The pod or follicle is covered with sharp prickles, and contains a large quantity of silky seed-down. This species of *asclepias* is very common in the United States, growing in sandy fields, and on the roadsides, from New England to Virginia. It flowers in July and August. Like the preceding species, it gives out a white juice when wounded, which has a faint smell, a sub-acrid taste, and an acid reaction.

Preparation.—The fresh root is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, and having poured it into a well-stoppered bottle, it is allowed to stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{4}$.

Dilutions must be prepared as directed under Class III.

ASCLEPIAS TUBEROSA, Linn.

Synonym, *Asclepias decubens*.

Nat. Ord., *Asclepiadaceæ*.

Common Names, Pleurisy Root. Butterfly Weed. Colic Root. Orange Apocynum.

The root of the butterfly weed is perennial, and gives origin to numerous stems, which are erect, ascending, or procumbent, round, hairy, of a green or reddish color, branching at the top, and about three feet in height. The leaves are scattered, oblong-lanceolate, very hairy, of a rich, deep-green color on their upper surface, paler beneath, and supported usually on short footstalks. They differ, however, somewhat in shape according to the variety of the plant. In the variety with decumbent stems, they are almost linear, and in another variety cordate. The flowers are of a beautiful reddish-orange color, and dispose in terminal or lateral corymbose umbels. The fruit is an erect lanceolate follicle, with flat ovate seeds connected to a longitudinal receptacle by long silky hairs. This plant differs from other species of *asclepias* in not emitting a milky juice when wounded. It is indigenous, growing throughout the United States, from Massachusetts to Georgia, and as far west as Texas. It is most abundant in the Southern States.

Preparation.—The fresh root is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, and having poured it into a well-stoppered bottle, it is allowed to stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{6}$.

Dilutions must be prepared as directed under Class III.

ASCLEPIAS VINCETOXICUM, Linn.

Synonyms, *Cynanchum Vincetoxicum, Persoon.* Vincetoxicum Officinale, *Moench.*

Nat. Ord., *Asclepiadaceæ*.

Common Name, White Swallow-wort.

This plant grows in rocky places, throughout the greater part of Europe. The subterraneous portion consists of a very knotty, many headed horizontal rootstock, with cup-shaped stem-scars, and with numerous nearly simple rootlets, which are about six inches long. The stem is about two feet high, and has nearly sessile cordate-ovate and acuminate leaves, the axils of which bear the small umbels of about nine flowers.

Preparation.—The fresh leaves are chopped and pounded to a pulp and weighed. Then take two-thirds by weight of alcohol, and add it to the pulp, stirring and mixing it well together, and then strain *lege artis* through a piece of new linen. The tincture thus obtained is allowed to stand eight days, in a well-stoppered bottle, in a dark, cool place, and then filtered.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class II.

ASIMINA TRILOBA, *Dunal.*

Synonyms, Ancona Triloba. Asimina Campaniflora. Parcellia Triloba. Uvaria Triloba.

Nat. Ord., Anonaceæ.

Common Name, Common Papaw.

This is a small tree from ten to twenty feet high, growing on the banks of streams in rich soil, from New York and Pennsylvania west to Illinois and southward. The young shoots and expanding leaves are clothed with a rusty down, but soon become glabrous. Leaves thin, obovate-lanceolate, pointed; petals dull-purple, veiny, round-ovate, six in number, increasing after the bud opens, the outer ones three to four times as long as the calyx. Stamens numerous in a globular mass. Pistils few, ripening one to four large and oblong (three to four inches long) pulpy several-seeded fruits, yellowish in color, sweet and edible in autumn. Seeds horizontal, flat, enclosed in a fleshy aril. Flowers appear with the leaves in April and May.

Preparation.—The ripe seeds, finely powdered, are covered with five parts by weight of alcohol, and allowed to remain eight days, in a well-stoppered bottle, in a dark, cool place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{10}$.

Dilutions must be prepared as directed under Class IV.

ASPARAGUS OFFICINALIS, *Linn.*

Nat. Ord., Smilacææ.

Common Name, Asparagus.

This universally well known plant, cultivated in our gardens for culinary use, is a native of Europe, and is found in sandy places, near the sea-coast, in meadows, and along the borders of forests. The root is composed of a short shaft terminating in a cluster of round, long, white fibres. From this root spring up several herbaceous, round, glabrous stems, nearly three feet high; leaves in fascicles, about an inch long, glabrous; flowers small, of a greenish-yellow, solitary and axillary; fruit bacciform, of a scarlet-red, three-celled with two or three black seeds.

Preparation.—The young sprouts are chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one sixth part of it, the rest of the alcohol is added. After having stirred the whole well, and having poured it into a well-stoppered bottle, it is allowed to stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{6}$.

Dilutions must be prepared as directed under Class III.

ASPERULA ODORATA, *Linn.***Nat. Ord.**, Rubiaceæ.**Common Names**, Sweet scented Wood-ruff. Wood Rowel.

This plant is a native of Europe, Northern Africa, Siberia, and Western Asia, growing in shaded hedgebanks, copses, etc. In Scotland it is found at a height of 1,200 feet. Rootstock is perennial, creeping, often stoloniferous. Stems are from six to eighteen inches high, subsimple, hairy beneath the nodes. Leaves are one to one and a half inches long, oblong-lanceolate, cuspidate, ciliate. Cymes subterminal, subumbellate. Corollatube $\frac{1}{4}$ inch in diameter, as long as the limb, white lobes obtuse. Fruit small, hispid with hooked hairs. The lower leaves are six in a whorl, the upper seven to nine, shining, odoriferous in drying. Flowers appear in May and June.

Preparation.—The fresh herb, gathered shortly before coming into bloom, is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one sixth part of it, the rest of the alcohol is added. After having stirred the whole well, and having poured it into a well-stoppered bottle, it is allowed to stand eight days, in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Amount of drug power, $\frac{1}{6}$.

Dilutions must be prepared as directed under Class III.

ASPLENIUM SCOLOPENDRIUM, *Linn.***Synonym**, *Scolopendrium Officinatum*, *Smith.***Nat. Ord.**, Polypodiaceæ.**Common Name**, Hart's-Tongue.

This is a fern indigenous in Europe and America. It is found growing in shaded ravines and under limestone cliffs, near Chittenango Falls, and near Jamesville, etc., also in Onondaga Co., New York. Frond oblong-lanceolate from an auricled heart-shaped base, entire or wavy-margined (seven to eighteen inches long, one to two inches wide), of a bright green color. Fruit-dots linear, elongated, almost at right angles to the midrib, contiguous by twos, one on the upper side of one veinlet, and the next on the lower side of the next superior veinlet, thus appearing to have a double indusium opening along the middle.

Preparation.—The fresh leaves are chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one sixth part of it, the rest of the alcohol is added. After having stirred the whole well, and having poured it into a well-stoppered bottle, it is allowed to stand eight days, in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Amount of drug power, $\frac{1}{6}$.

Dilutions must be prepared as directed under Class III.

ASTERIAS RUBENS.

Synonyms, *Uraster Rubens*, *Asteracanthion Rubens*.

Class, Echinodermata.

Order, Asteroidea.

Family, Asteriadæ.

Common Name, Star Fish.

This is a marine animal quite common along the various coasts of Europe, and occasionally found along the American coasts. It is shaped in exact resemblance to a five pointed star, is garnet-red in color, and has the faculty of reproducing any member that has been accidentally lost. The central portion contains the mouth and stomach, the former being situated upon the under surface, and armed with hard papillæ in the place of teeth; the stomach is simply a globular sac. The nervous system is composed of a circular chain of ganglia from which nerve filaments are given off. An eye is situated at the extremity of each arm. The entire animal is supported by an external calcareous envelope or skeleton, covered with spines and tubercles. For locomotion, it is provided with numerous muscular tube-like processes passing out through foramina in the shelly covering, and arranged in double rows on both surfaces. Each of these terminate in a disk, depressed in the centre.

Preparation.—The live animal, cut up finely, is covered with five parts by weight of alcohol, poured into a well-stoppered bottle, and allowed to remain eight days, in a dark, cool place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{16}$.

Dilutions must be prepared as directed under Class IV.

ATRIPLEX OLIDUM.

Synonym, *Chenopodii Olidi*. *Chenopodium Vulvaria*.

Nat. Ord., Chenopodiaceæ.

Common Names, Stinking orache or arach. Stinking blite or goosefoot.

This plant, a native of Europe, grows luxuriantly everywhere on ways, walls, heaps of rubbish, places for collecting manure; sprout stems from six to twelve inches long, erect or decumbent, with petiolate, rhombic-ovate, entire, gray-green leaves and flowers standing in the axils, and in glomerated naked racemes. The whole plant during the flowering time, especially the lower surface, looks as if dusted with flour and when triturated, emits an exceedingly nauseous smell, similar to that of decayed cheese.

Preparation.—The fresh plant is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well and having poured it into a well-stoppered bottle, is allowed to stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{8}$.

Dilutions must be prepared as directed under Class III.

ATROPINUM.

Synonyms, Atropia. Atropine.

Formula, $C_{17}H_{23}NO_3$.

Molecular Weight, 289.

An alkaloid obtained from *Belladonna*, especially from the root.

Preparation of Atropia.—Take of *belladonna* root in fine powder forty-eight troyounces; purified chloroform four troyounces and a half; diluted sulphuric acid, solution of potassa, alcohol, water, each a sufficient quantity. Mix the powder with a pint of alcohol, and, having introduced the mixture into a cylindrical percolator, pour alcohol gradually upon it until sixteen pints have passed. From the liquid thus obtained distil off twelve pints of alcohol. To the residue add sufficient diluted sulphuric acid to give it an acid reaction, and, having evaporated the liquid to half a pint, add an equal bulk of water, and filter through paper. To the filtered liquid add; first a troyounce and a half of the chloroform, and then solution of potassa in slight excess, and shake the whole together, at intervals, for half an hour. When the heavier liquid has subsided separate it, and, having added a troyounce and a half of the chloroform to the lighter liquid, again shake them together, and separate the heavier from the lighter liquid as before. Add to this lighter liquid the remainder of the chloroform, and, after agitation, separate the heavier liquid for the third time. Mix the heavier liquids in a capsule, and set the mixture aside, until, by spontaneous evaporation, the atropia is left dry.

Properties and Tests.—Pure atropia is in colorless acicular crystals. It is without odor, and has a disagreeably bitter and acrid taste. It fuses at $90^{\circ}C.$ ($194^{\circ}F.$), volatilizes at $140^{\circ}C.$ ($284^{\circ}F.$), partly unchanged, and at a higher heat is completely decomposed, leaving no residue. It dissolves in about 300 parts (450 parts, Brandes) of cold water, in 25 parts (36 parts, Brandes) of ether, in 3 parts of chloroform, 38 parts of olive oil, also in glycerin and in little alcohol. It has a strong alkaline reaction and neutralizes acids, forming crystallizable salts, which are soluble in water and alcohol, but insoluble in ether and chloroform. Its solutions are precipitated by chloride of gold, iodine, iodo-hydrargyrate of potassium and tannin, but not by platinic chloride, except when very concentrated. Concentrated nitric acid dissolves atropia with a yellow color, the solution, when heated turning orange-red and then becoming colorless. Concentrated sulphuric acid yields with atropia a colorless solution, becoming red and black when heated, emitting, according to Gulielmo (1863), an odor resembling orange flowers. When heated with baryta water, soda, or strong hydrochloric acid, atropia is decomposed, yielding tropic acid $C_9H_{10}O_3$, atropic and isatropic acids $C_9H_8O_2$, and tropia, which is a crystallizable strongly alkaline compound having the formula $C_8H_{15}NO$. According to Hübschmann (1858) commercial atropia frequently contains an uncrystallizable alkaloid *belladonna*, which is

sparingly soluble in water, and has a faintly bitter, burning, acrid taste. It may be removed from atropia by adding to the watery solution of the salt a small quantity of carbonate of potassium when it is precipitated, before any atropia is liberated. In 1850, von Planta stated atropia to be chemically identical with daturia, the alkaloid of stramonium; and since that time it is said the latter alkaloid has not unfrequently been manufactured and sold as atropia, notwithstanding that the researches of von Schroff and others have proved it to exert a more powerful physiological action than the latter. A. Poehl (1877) has pointed out the following differences between the two alkaloids: Atropia is optically inactive; but daturia turns polarized light to the left, its specific rotating power being 14.12° . Atropia salts are precipitated by platinic chloride, but daturia salts are not affected by the same reagent. Atropia salts are not precipitated by picric acid, which, however, precipitates daturia salts.

Preparation for Homœopathic Use.—Pure atropia is prepared by trituration, as directed under Class VII.

ATROPINUM SULPHURICUM.

Synonyms, Atropiæ Sulphas. Atropia Sulphurica.

Common Name, Sulphate of Atropia.

Formula, $2\text{C}_{17}\text{H}_{23}\text{NO}_3 \cdot \text{H}_2\text{SO}_4$.

Molecular Weight, 676.

Preparation of Sulphate of Atropia.—Take of atropia sixty grains; stronger ether four fluid ounces and a half; sulphuric acid six grains; stronger alcohol a fluid drachm. Dissolve the atropia in the ether; then mix the acid and alcohol, and add the mixture, drop by drop to the ethereal solution until the atropia is saturated. Allow the liquid to stand until the precipitate formed is deposited. Then decant the ether, and allow the residue to evaporate spontaneously until the salt is left dry.

Properties and Tests.—Sulphate of Atropia forms a white, somewhat crystalline, powder, which is insoluble in ether and chloroform, but freely soluble in water and alcohol, the solutions being neutral to test-paper, and yielding a white precipitate with chloride of barium. If dissolved in 250 parts of water, the solution is not rendered turbid by carbonate of potassium, unless belladonna be present. The salt leaves no ash if burned with free access of air.

Preparation for Homœopathic Use.—The pure sulphate of atropia is prepared by trituration, as directed under Class VII.

AURUM.

Synonyms, Aurum Metallicum. Aurum Foliatum.

Common Name, Gold.

Symbol, Au.

Atomic Weight, 196.7.

Origin and Properties.—This well-known metal is chiefly found

in the metallic state, always associated with other metals, and frequently in various native sulphurets. It is the most ductile of all metals, softer than silver, fuses at nearly 1200° C. (2200° F.), has the density 19.3, and is of a reddish-yellow color and metallic lustre, but when powdered of a brown color, acquiring lustre by pressure. It is not altered by exposure to air and water, and does not dissolve in acids, but is soluble in liquids containing or generating chlorine. A solution of chloride of gold yields the metal in a finely divided condition when added to solution of ferrous sulphate, oxalic acid, or other oxidizable compound; the product being well washed with distilled water.

Preparation for Homœopathic Use.—The precipitated metal is prepared by trituration, as directed under Class VII.

In the Transactions of the American Institute of Homœopathy, 1880, the following (Witte's) formula is given: Sixteen grains of gold are dissolved in nitro-muriatic acid; to this solution sixteen pints of distilled water are added; then six grains of phosphorus are dissolved in twelve fluid ounces of ether, and the two solutions are mixed together. To separate the gold a solution of aluminium chloride is added, then aqua ammonia in excess. The action of the ammonia causes the formation of aluminium hydrate, which when filtered out, retains the particles of gold. The aluminium hydrate is now dissolved out with muriatic acid, the solution passing through the filter leaving the gold, which is then thoroughly washed with alcohol to dissolve out any phosphorus, and then with distilled water until nothing but the fine gold particles are left on the filter. The gold thus remaining is submitted to the usual process of trituration.

AURUM FULMINANS.

Common Name, Fulminating Gold.

Preparation of Fulminating Gold.—This metallic substance, which at first was obtained by combining oxide of gold with ammonia, is more advantageously prepared by means of pure chloride of gold. It is thus procured by precipitating the chloride by ammonia, after which the precipitate is washed and dried at a moderate temperature.

Properties.—It is a solid, yellow, insipid substance, detonating with violence by friction or a blow.

Preparations for Homœopathic Use. Only centesimal triturations are used, the first and second of which are prepared with starch moistened with diluted alcohol; all further triturations with sugar of milk, as directed under Class VII.

AURUM MURIATICUM.

Synonyms, Auri Chloridum. Muriate of Gold. Tri-chloride of Gold.

Present Name, Auric Chloride.

Common Name, Chloride of Gold.

Formula, Au Cl_3 .

Preparation of Chloride of Gold.—This is obtained by dissolving pure gold in three times its weight of nitro-muriatic acid, with the aid of a moderate heat. The solution is evaporated by a gentle heat and nearly to dryness, being at the same time stirred with a glass rod. This is dissolved in water, filtered from some aurous chloride, Au Cl, and again evaporated.

Properties and Tests.—Chloride of Gold is in the form of a crystalline mass of a deep red color, is decomposed above 150° C. (302° F.), dissolves readily in water, giving it a fine yellow tint, and is also soluble in alcohol, ether, and volatile oils, which solutions are gradually reduced. Being deliquescent, it requires to be kept in ground-stoppered bottles. It is inodorous, but slightly bitter, styptic, and leaving a metallic after-taste.

Preparation for Homœopathic Use.—The pure chloride of gold is dissolved in nine parts by weight of distilled water.

Amount of drug power, $\frac{1}{10}$.

Dilutions must be prepared as directed under Class V—*a*.

Triturations of the pure chloride of gold are prepared as directed under Class VII.

AURUM MURIATICUM NATRONATUM:

Synonyms, Auri et Sodii Chloridum. Auro-Natrium Chloratum. Chloro-Aurate of Soda.

Present Name, Auri-sodic Chloride.

Common Name, Chloride of Gold and Sodium.

Formula, Na Cl, Au Cl₃, 2H₂ O.

Preparation of Chloride of Gold and Sodium.—This is prepared by dissolving four parts of pure gold in twelve parts of nitro-muriatic acid, with the aid of moderate heat, evaporating the solution to dryness, and dissolving the dry mass in eight times its weight of distilled water. To this solution one part of pure decrepitated common salt is added, previously dissolved in four parts of water. The mixed solution is then evaporated to dryness, being in the meantime constantly stirred with a glass rod.

Properties.—The salt is of a golden-yellow color, and, when crystallized, is in the form of long prismatic crystals, unalterable in the air.

Preparation for Homœopathic Use.—The pure chloride of gold and sodium is prepared by trituration, as directed under Class VII.

AURUM SULPHURATUM.

Synonyms, Aurum Sulphuricum. Sulphuretted Gold.

Present Name, Auric Sulphide.

Common Name, Black Sulphuret of Gold.

Preparation and Properties of Sulphuretted Gold.—Any quantity of chloride of gold dissolved in ten times as much water and acidulated with a little muriatic acid, is to be heated to boiling, and there is

thrown into the boiling solution sulphuretted hydrogen-gas till the decomposition is at an end. The sulphuretted gold secedes as a dark coffee-brown precipitate, which yields after washing and drying between blotting paper and with most gentle heat a dark brown powder with some metallic glittering, and is to be preserved carefully in well-stoppered bottles.

Preparation for Homœopathic Use.—Sulphuretted gold is prepared by trituration, as directed under Class VII.

BADIAGA.

Synonyms, *Spongia Palustris*, Linn. *Spongilla Lacustris*, Link. *Spongilla Fluvialis*.

Nat. Ord., Spongiæ.

Common Names, Badiaga. River Sponge. Fresh Water Sponge.

This beautiful green alga is to be found in stagnant waters, also in ditches in Germany, but more especially in Russia. It is very similar in texture to the sea-sponge; appears in branching ramifications like stags' horns with rounded corners and roundish ends, from the thickness of a quill to that of a finger. It has a peculiar strong smell like putrescent crawfish.

Preparation.—The dried and pulverized sponge is covered with five parts by weight of alcohol; having poured it into a well-stoppered bottle, let it stand eight days in a dark, cool place, shaking twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{16}$.

Dilutions must be prepared as directed under Class IV.

Triturations are prepared from the dried sponge, as directed under Class VII.

BALSAMUM PERUVIANUM.

Synonyms, *Myrospermum Peruiferum*, De Candolle. *Myroxylon Pereiræ*, Klotzsch. *Balsamum Indicum Nigrum*.

Nat. Ord., Leguminosæ.

Common Names, Balsam of Peru. Quinquino.

This handsome tree, with a straight, round, lofty stem, a smooth ash-colored bark, and spreading branches at the top, grows in Central America, in the State of San Salvador, upon the Pacific Coast. The balsam is obtained from incisions made in the bark, which are slightly burned, so as to cause the juice to flow.

Preparation.—The balsam is dissolved in the proportion of two parts by weight to nine parts by weight of ninety-five per cent. alcohol, and designated mother-tincture.

Drug power of tincture, $\frac{1}{16}$.

Dilutions must be prepared as directed under Class V—a.

BAPTISIA.

Synonyms, *Baptisia Tinctoria*, *R. Brown.* *Sophora Tinctoria*, *Linn.* *Podalyria Tinctoria*, *Micheaux.*

Nat. Ord., Leguminosæ.

Common Name, Wild Indigo.

This is an indigenous perennial plant, found throughout the United States, growing abundantly in woods and dry barren uplands. Its stem is from two to three feet high, smooth and slender, very branchy, rather glaucous. Small, ternate, cuneate-obovate, bluish-green leaves, almost sessile; stipules and bracts minute and deciduous; racemes few-flowered, terminating the bushy branches; corolla yellow, half inch long; pods oval-globose, on a stalk longer than the calyx. Flowers appear from July to September.

Preparation.—The fresh root with its bark, is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and after thoroughly mixing the pulp with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well and having poured it into a well-stoppered bottle, it is allowed to stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

BARTFELDER (Acid Spring).

Cold springs in Upper Hungary; temperature from 45° to 50° F.

Analysis (*Schultes*).

16 ounces furnished 11.59 grains of residue, containing

Sodium Carbonate,.....	6.07 grains.
Sodium Chloride,	3.03 "
Potassium Carbonate,.....	0.75 "
Potassium Chloride,.....	0.62 "
Ferruin Carbonate,.....	0.40 "
Silica,.....	0.35 "
Extractive matter,.....	0.37 "

Preparation.—Not proven in potencies, but if required, prepare first and second dilutions with distilled water, third and higher potencies with alcohol.

BARYTA ACETICA.

Synonym, Barium Acetate.

Present Name, Baric Acetate.

Common Name, Acetate of Barium.

Formula, $C_2H_3O_2 Ba$.

Preparation of Acetate of Barium.—This salt is obtained by dissolving pure carbonate of barium in dilute acetic acid, with the aid of gentle heat, till it is neutralized. The liquid is diluted with an equal quantity of distilled water, filtered, and evaporated to dryness, and preserved in well-stoppered bottles.

Properties and Tests.—Acetate of barium is a colorless salt, in oblique rhombic prisms, readily soluble in water, the solution giving an immediate white precipitate with a solution of sulphate of lime. If the salt itself is acted upon by sulphuric acid, acetic vapors are given off.

Preparation for Homœopathic Use.—One part by weight of acetate of barium is dissolved in nine parts by weight of distilled water.

Amount of drug power, $\frac{1}{10}$.

Dilutions must be prepared as directed under Class V—*a*.

Triturations of pure acetate of barium are prepared as directed under Class VII.

BARYTA CARBONICA.

Synonyms, Barium Carbonicum. Barii Carbonas.

Present Name, Baric Carbonate.

Common Name, Carbonate of Barium.

Formula, Ba CO_3 .

Molecular Weight, 197.

Origin and Preparation of Carbonate of Barium.—Carbonate of barium is found native, as *Witherite*, in large quantities, in the lead mines at Alston Moor and at Anglesark in Lancashire, England. It is also met with in Scotland and Sweden. It may be obtained artificially by precipitating a soluble barium salt with an alkaline carbonate, or by heating to redness and fusion a mixture of ten parts of heavy spar (barium sulphate), two of carbon, and five of potash, and washing the fused mass with water, when barium carbonate is left behind. Its formation is explained by the following equation: $\text{Ba SO}_4 + \text{C}_2 + 2\text{HKO} = \text{Ba CO}_3 + \text{K}_2\text{S} + \text{CO}_2 + \text{H}_2\text{O}$.

Properties.—Witherite is found in pale yellowish or grayish fibrous masses, or in rhombic crystals, varying in specific gravity between 4.3 and 4.56. The artificially prepared barium carbonate forms a soft, white, amorphous or crystalline, tasteless powder. Its specific gravity is 4.22 to 4.307. It requires over 15,000 parts of boiling water for solution, but dissolves more readily in solutions of chloride and some other salts of ammonium, and is also slightly soluble in some carbonates, and even sulphates. When recently precipitated it decomposes the solutions of many salts, precipitating the metals either as hydrates or carbonates. Owing to its solubility in hydrochloric and other acids, it acts as a poison when taken internally.

Tests.—Barium carbonate should be completely soluble with effervescence, in dilute muriatic acid (absence of barium sulphate). The solution is not colored or precipitated by ammonia or hydro-sulphuric acid (absence of lead and other metals). When the solution is precipitated by an excess of sulphuric acid, the filtrate yields no precipitate with carbonate of sodium (absence of calcium and other earths).

Preparation for Homœopathic Use.—The pure carbonate of barium is prepared by trituration, as directed under Class VII.

BARYTA CAUSTICA.

Synonyms, Caustic Barium. Barye Oxide. Baryta Oxidata. Protoide of Barium.

Common Name, Caustic or Pure Barytes.

Preparation of Caustic Barium.—Mix in a crucible 4½ parts of pulverized sulphate of barium, and one part of lampblack, and expose the mass to the heat of a furnace until it has a grayish-white appearance. Then let it cool, place it in an iron pan, pour upon it eight times its quantity of water, boil it, and add copper-filings until sulphuretted hydrogen ceases to be developed when acetic acid is poured upon a drop of the boiling mass. Filter the liquid while yet hot, into a warmed bottle, which is to be well closed and put aside. The residue on the filter is principally a demi-sulphuret of copper. From the filtered liquid, caustic barium is precipitated during the process of cooling in the shape of prismatic crystals; the water of crystallization is removed by heat. The crystals are placed upon a filter, and dried.

Preparation for Homœopathic Use.—The pure caustic barium is prepared by trituration, as directed under Class VII.

BARYTA JODATA.

Synonym, Barii Iodidum.

Present Name, Baric Iodide.

Common Name, Iodide of Barium.

Formula, $Ba I_2, 2H_2 O$.

Molecular Weight, 427.

Preparation of Iodide of Barium.—It is conveniently made by boiling a solution of iodide of iron with excess of carbonate of barium, filtering, and crystallizing.

Properties and Tests.—It forms large transparent rhombic prisms which are very freely soluble in water and alcohol, and when heated melt and become anhydrous. Its aqueous solution gives a copious white precipitate with sulphuric acid, which is insoluble in acids, iodine being at the same time liberated. When the same solution is mixed with mucilage of starch, it yields a blue color on the addition of a minute quantity of solution of chlorine.

Preparation for Homœopathic Use.—The pure iodide of barium is prepared by trituration, as directed under Class VII.

BARYTA MURIATICA.

Synonym, Barii Chloridum.

Present Name, Baric Chloride.

Common Name, Chloride of Barium.

Formula, $Ba Cl_2, 2H_2 O$.

Molecular Weight, 244.

Preparation of Chloride of Barium.—Take of carbonate of barium in small pieces, muriatic acid, each four troyounces; water a pint. Mix the acid with the water, and gradually add the carbonate

of barium. Towards the close of the effervescence apply a gentle heat, and, when chemical action has ceased, filter the liquid, and evaporate so that crystals may form when it cools.

In this process the hydrochloric acid reacts upon the carbonate of barium, producing barium chloride which remains in solution, and liberating carbonic acid which escapes, some water being also formed. The reaction is explained by the following equation: $\text{Ba CO}_3 + 2\text{HCl} = \text{Ba Cl}_2 + \text{CO}_2 + \text{H}_2 \text{O}$.

Properties.—Barium chloride exists in colorless translucent rhomboidal tables or lamellæ. It is permanent in the air at the ordinary temperature, but loses one-half of its water above 55°C . (131°F .), and becomes anhydrous at 121°C . (250°F .). 100 parts of water retain at 105°C . (221°F .) 60 parts, at 40°C . (104°F .) about 41, at 20°C . (68°F .) 35.7, and at 10°C . (50°F .) 34.3 parts of the salt in solution. (*Mulder*.) The aqueous solutions are partly precipitated by strong hydrochloric and nitric acid, in which the salt is less soluble than in water. It is insoluble in absolute alcohol, but dissolves in spirit containing water, and imparts to the alcohol flame a yellow color. It possesses the persistently bitter and disagreeable astringent taste of the soluble barium salts. Its solution yields with nitrate of silver, and with potassium sulphate or dilute sulphuric acid, copious white precipitates, which are insoluble in nitric acid. Sulphates, phosphates, carbonates, and the salts of most organic acids yield with barium chloride, precipitates which are insoluble in water.

Tests.—Chloride of barium is entirely soluble in water (absence of barium carbonate and sulphate). The solution is not colored or precipitated by ammonia or hydrosulphuric acid (absence of lead and other metals). When precipitated by an excess of sulphuric acid and filtered, the liquor yields no precipitate with sodium carbonate (absence of calcium and other earths). Alcohol shaken with the powder salt, then poured off and ignited, does not burn with a red flame (absence of strontium chloride).

Preparation for Homœopathic Use.—One part by weight of pure chloride of barium is dissolved in nine parts by weight of distilled water.

Amount of drug power, $\frac{1}{15}$.

Dilutions must be prepared as directed under Class V—*a*.

Triturations of pure chloride of barium are prepared as directed under Class VII.

BELLADONNA.

Synonyms, *Atropa Belladonna*, *Linn.* *Solanum Furiosum* or *Maniacum*. *Solanum Somniferum*.

Nat. Ord., Solanaceæ.

Common Names, Deadly Nightshade. Common Dwale.

This is an herbaceous perennial, with a fleshy, creeping root, from which rise several erect, round, purplish, branching stems, to the height of about three feet. The leaves, which are attached by short footstalks to the stem, are in pairs of unequal size, oval, pointed, entire, of a

dusky green on their upper surface, and paler beneath. The flowers, which are supported upon solitary peduncles and rise from the axils of the leaves, are bell-shaped, about an inch long, of a dingy, green-yellow with brownish veins, violet at the forepart; the fruit is a roundish berry, with a longitudinal furrow on each side, at first green, afterwards red, ultimately of a deep purple color, bearing considerable resemblance to the black cherry, except that it has a nauseous, slightly sweetish taste; it contains numerous seeds in two distinct cells, and has a sweetish, violet-colored juice. The plant is a native of Europe, where it grows in shady places, along walls, and amidst rubbish, flowering in July, and ripening its fruit in September.

Preparation.—The entire fresh plant, gathered when coming into flower, is chopped and pounded to a fine pulp, and pressed out *lege artis* in a piece of new linen. The expressed juice is then, by brisk agitation, mingled with an equal part by weight of alcohol. This mixture is allowed to stand eight days in a well-stoppered bottle, in a dark, cool place, and then filtered.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class I.

BELLADONNA E RADICE.

Root of *Atropa Belladonna*, *Linn.*

Preparation.—The fresh root, gathered in autumn, is chopped and pounded to a fine pulp, and pressed out *lege artis* in a piece of new linen. The expressed juice is then, by brisk agitation, mingled with an equal part by weight of alcohol. This mixture is allowed to stand eight days in a well-stoppered bottle, in a dark, cool place, and then filtered.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class I.

BELLIS PERENNIS, *Linn.*

Nat. Ord., Compositæ.

Common Names, English Daisy. Garden Daisy. Hens and Chickens.

This is a perennial, found growing in pastures and meadows throughout Europe. Rootstock short, fibres stout. Leaves one to three inches long, fleshy, obovate-spathulate, obtuse or rounded at the crenate tip, midrib broad. Scape two to five inches high. Flower-head three-fourths to one inch in diameter, solitary; involucre bracts green, obtuse, often tipped with black. Ray-flowers white or tipped with pink, disk bright yellow. Flowers all the year.

Preparation.—The fresh plant, in flower, is chopped and pounded to a pulp and pressed out *lege artis* in a piece of new linen. The expressed juice is then, by brisk agitation, mingled with an equal part by weight of alcohol. This mixture is allowed to stand eight days, in a dark, cool place, and then filtered.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class I.

BENZINUM NITRICUM.

Synonym, Nitrobenzolum.

Present Name, Nitro-benzol.

Common Names, Nitro-benzine. Artificial Oil of Bitter Almonds.

Formula, $C_6H_5(NO_2)$.

Molecular Weight, 123.

Preparation of Nitro-benzol.—Benzol is added in small portions to warm fuming nitric acid, when a violent action takes place, and a dark red liquid is formed, which is mixed with water, and the oily precipitate washed with the same liquid.

Properties and Tests.—Nitro-benzol is a yellowish, oily liquid, having the spec. grav. 1.209, crystallizing in needles at $3^{\circ}C.$ ($37.4^{\circ}F.$), and boiling at $213^{\circ}C.$ ($415.4^{\circ}F.$). It has the strong odor of bitter almonds—hence the incorrect name *artificial oil of bitter almonds*,—a sweet taste, and dissolves in concentrated sulphuric and nitric acid, and in all proportions in alcohol and ether. In its alcoholic solution it is readily converted into anilina through the influence of nascent hydrogen. It is very poisonous.

Preparation for Homœopathic Use.—Two parts by weight of nitro-benzol are dissolved in nine parts by weight of ninety-five per cent. alcohol.

Amount of drug power, $\frac{1}{15}$.

Dilutions must be prepared as directed under Class VI—*a*.

BERBERINUM.

Synonyms, Berberin. Berberia. Berberina.

Formula, $C_{20}H_{17}NO_4$.

Origin.—Berberin, or berberia, was first discovered by Chevallier and Pellatan (1826) in the bark of *Xanthoxylum clava Herculis*, and named *xanthopicroit*; its identity with berberina was proved by Perrins (1862). A. Buchner obtained it (1835) crystallized from barberry root, believed it to possess acid properties, and named it berberin. It had been previously separated in an impure condition by Brandes (1825), and by Buchner (1830). G. Kemp (1841) noticed that it forms crystallizable compounds with various mineral and organic acids; but its alkaloidal nature was first proven by Fleitmann (1846). Since then it has been discovered in numerous plants of the orders Berberidaceæ, Ranunculaceæ, Menispermaceæ, etc.

Preparation of Berberina.—For the preparation of berberina, Procter (1864) gives a process which is based upon those of Buchner and Fleitmann. The root of hydrastis is exhausted with boiling water, the decoction evaporated, the soft extract exhausted by strong alcohol, some water is added, most of the alcohol distilled off, and then an excess of sulphuric acid added, when, on cooling, sulphate of berberina crystallizes, requiring recrystallization from hot water for purification. Its solution in hot water is then decomposed by freshly precipitated oxide of lead (caustic baryta, Fleitmann), and the filtrate allowed to crystallize.

Properties.—It forms fine yellow needles, which lose at 100° C. (212° F.) nearly 19.5 per cent. of water, fuse at 120° C. (248° F.), are insoluble in ether and petroleum benzin, dissolve slightly in cold water and benzol, and more freely in alcohol. Its composition is $C_{20}H_{17}NO_4$ (Perrins). By adding to its hot solution an excess of acid, crystals of neutral or acid salts are obtained, which are usually of a bright or golden-yellow color, have a bitter taste, and are very slightly soluble in acidulated water.

Tests.—Dissolved in hot alcohol, the salts of berberina yield, with solution of iodine in potassium iodide, dark-green scales, of a metallic lustre, and appearing reddish-brown in transmitted light; if an excess of iodine be employed, the crystals are of a red-brown color in reflected light. This behavior is recommended by Perrins as a convenient test of this alkaloid. Hydrochlorate of berberina assumes with chlorine a blood-red color (Buchner). Fused with potassium hydrate, berberina is decomposed, yielding two acids, one of which is sublimable, and vapors having the odor of chinolin (Hlasiwetz and Gilm).

Preparation for Homœopathic Use.—The pure berberina is prepared by trituration, as directed under Class VII.

BERBERIS.

Synonyms, Berberis Vulgaris, *Linn.* Berberis Pisifera. Oxy-cantha. Spina Acida.

Nat. Ord., Berberidacæ.

Common Names, Common Barberry. Pipperidge Bush.

This is a native of Europe, but grows wild in waste grounds in the eastern parts of New England. It is a spreading shrub, from four to six feet or more in height, with thorny branches, a light grey bark, and a fine yellow wood. The leaves are somewhat obovate, with ciliated teeth on their edges, and upon the young shoots three-parted and spiny. The flowers, which are in drooping many-flowered racemes, have yellow entire petals, and are succeeded by small, oblong, red berries containing two or three seeds. The berries have a grateful, sour, astringent taste. The bark of the root is brown externally, saffron-colored within.

Preparation.—The freshly dried bark from the root is finely divided and weighed. Then five parts by weight of alcohol are poured over it, and having been put into a well-stoppered bottle is allowed to stand eight days in a dark, cool place, shaking twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{16}$.

Dilutions must be prepared as directed under Class IV.

BISMUTHUM METALLICUM.

Synonyms, Bismuthum. Metallic Bismuth.

Common Name, Bismuth.

Symbol, Bi.

Atomic Weight, 210.

Origin.—The supply of bismuth is chiefly derived from the mines in Saxony, where it exists in the metallic state, associated with cobalt, nickel and silver ores. It is likewise found oxidised as bismuth ochre, and in combination with sulphur and with tellurium. Deposits of bismuth ores have recently been discovered in France, Australia, Mexico, and Texas.

Preparation of Metallic Bismuth.—The metal is extracted by a simple process of smelting, advantage being taken of its low melting point, and run into hot iron receiving pots, where it congeals. The sulphide of bismuth requires to be roasted; it is thus converted into oxide, which is reduced to the metallic state by being heated with charcoal. The crude metal thus obtained contains variable quantities of arsenic, copper, iron, and other metals.

Purification of Metallic Bismuth.—Take of metallic bismuth ten ounces; nitrate of potash in powder two ounces. Put the bismuth and one ounce of the nitrate of potash into a crucible, and heat them to a temperature at which both the metal and the salt are fused. Continue the heat, constantly stirring the contents of the crucible for fifteen minutes, or until the salt has solidified into a slag over the metal. Then remove the salt, add the remainder of the nitrate of potash to the bismuth in the crucible, and repeat the process as before. Finally, pour the bismuth, while fused, into a suitable mould, and allow it to cool.

Properties.—Bismuth is a brilliant greyish-white metal with a distinct roseate tinge, and a crystalline lamellate texture. When fused, bismuth is cooled until a crust has formed, and the liquid portion is then poured out; the crucible will be found lined with rhombohedral crystals resembling cubes. Its specific gravity is 9.83, which is diminished by high pressure. It fuses at 264° C. (507° F.), and when congealing expands considerably, like water under similar circumstances. It is not altered at the ordinary temperature by exposure to the air, but at a red heat burns with a bluish flame to brown oxide, becoming yellow on cooling, and when exposed, in closed vessels, to a still higher temperature, it volatilizes. It has the peculiar property of lowering the fusing point of metals: an alloy of two parts of bismuth and one part each of lead and tin fuses at 93.75° C. (200.75° F.).

Tests.—It is but slightly attacked by boiling hydrochloric or dilute sulphuric acid; but nitric acid dissolves it readily, the solution on concentrating yielding crystals of bismuthous nitrate (see bismuthi subnitratis); the mother liquor or the original solution in nitric acid, suitably diluted with water and separated from the white precipitate of subnitrate should not yield a white precipitate with sulphuric acid (lead), or a blue one with potassium ferrocyanide (iron) or with the same reagent a reddish-brown one (copper). Silver, which is occasionally present, will be indicated by the white precipitate which takes place in the nitric acid solution on the addition of hydrochloric acid.

Preparation for Homœopathic Use.—The pure metallic bismuth is prepared by trituration, as directed under Class VII.

BISMUTHUM OXYDATUM.

Synonyms, Bismuthi Oxidum. Hydrated Oxide of Bismuth. Sesquioxide of Bismuth.

Common Name, Oxide of Bismuth.

Formula, Bi_2O_3 .

Molecular Weight, 468.

Preparation of Oxide of Bismuth.—Take of subnitrate of bismuth one pound; solution of soda four pints; mix and boil for five minutes; then, having allowed the mixture to cool and the oxide to subside, decant the supernatant liquid, wash the precipitate thoroughly with distilled water, and finally dry the oxide by the heat of a water-bath.

In this process the subnitrate of bismuth is decomposed by the soda, nitrate of sodium and white hydrate of bismuth being formed, the former of which remains dissolved in the water; $2 (\text{Bi NO}_3 \cdot \text{H}_2\text{O}) + 2 \text{Na HO}$ yields $\text{Bi}_2 6 \text{HO}$ (or $\text{Bi}_2\text{O}_3 \cdot 3 \text{H}_2\text{O}$) + 2Na NO_3 . At the temperature of boiling water the hydrate of bismuth parts with its water, leaving the anhydrous oxide.

Properties.—Oxide of bismuth forms a dull yellow, more or less crystalline powder, which dissolves in acids without effervescence, and when heated to incipient redness is not diminished in weight. At a higher temperature it fuses to a brown mass, which becomes yellow again on cooling.

Tests. The oxides of lead and silver are likely to be present as impurities, and are detected by dissolving in nitric acid, and testing as described under bismuthum subnitricum.

Preparation for Homœopathic Use.—The pure oxide of bismuth is prepared by trituration, as directed under Class VII.

BISMUTHUM SUBNITRICUM.

Synonyms, Album Hispanicum. Bismuthi Subnitratis. Magisterium Bismuthi. Marcassita Alba.

Common Names, Pearl White. Subnitrate of Bismuth. White Oxide of Bismuth.

Formula, $\text{Bi ONO}_3 \cdot \text{H}_2\text{O}$.

Molecular Weight, 306.

Preparation of Subnitrate of Bismuth.—Take of bismuth in pieces two troyounces; nitric acid, carbonate of sodium, each ten ounces; water of ammonia six fluidounces; distilled water a sufficient quantity. Mix four troyounces and a half of the nitric acid with four fluidounces of distilled water in a capacious glass vessel, and, having added the bismuth, set the whole aside for twenty-four hours. Dilute the resulting solution with ten fluidounces of distilled water, stir it thoroughly, and at the end of twenty-four hours filter through paper. Dissolve the carbonate of sodium in twelve fluidounces of distilled water with the aid of heat, and filter the solution through paper. To this, when cold, slowly add the solution of nitrate of bismuth, with constant stirring. Transfer the whole to a strainer, and, after the pre-

precipitate has been drained, wash it with distilled water until the washings pass tasteless, and drain again as completely as possible. Then place the moist precipitate in a capacious vessel, gradually add the remainder of the nitric acid, and afterwards four fluidounces of distilled water, and set the solution aside. At the end of twenty-four hours filter through paper, and to the filtered liquid, previously diluted with four pints of distilled water, slowly add the water of ammonia, with constant stirring. Transfer the whole to a strainer, and after the precipitate has been drained, wash it with two pints of distilled water, and drain it again. Lastly, dry it upon bibulous paper with a gentle heat, and rub it into powder.

The above process takes cognizance of the arsenic which is usually present in commercial bismuth. By dissolving the metal in nitric acid, the latter is partly decomposed, nitrous acid vapors being evolved and water generated, while the bismuth dissolves, forming bismuthous nitrate, thus: $\text{Bi}_2 + 8 \text{HNO}_3 = 2 \text{Bi}_3 \text{NO}_3 + 2 \text{NO} + 4 \text{H}_2 \text{O}$. Other metals likely to be present are dissolved with the formation of nitrates, except arsenic, which is oxidized to arsenic acid. On diluting the solution, which is strongly acid, with sufficient water until a turbidity begins to form without disappearing again on stirring, the arseniate of bismuth in solution becomes sparingly soluble, and is mostly deposited in the course of twenty-four hours, and may then be removed by filtration. On adding the filtrate slowly to an excess of an alkaline carbonate, the bismuth is precipitated as subcarbonate, together with the other metals, except arsenic, nearly the whole of which will remain in solution as arseniate of sodium, and may be removed by washing with water. The precipitated subcarbonate is again converted into nitrate, and this solution again set aside for twenty-four hours, to remove any arseniate of bismuth which may separate. The filtered liquid of bismuthous nitrate is now mixed with water, when subnitrate of bismuth will be precipitated, a portion of the bismuth remaining in solution in the liberated nitric acid; the decomposition is shown by the equation $6 (\text{Bi}_3 \text{NO}_3) + 10 \text{H}_2 \text{O} = 5 (\text{BiONO}_3 \cdot \text{H}_2 \text{O}) + \text{Bi}_3 \text{NO}_3 + 10 \text{HNO}_3$. In order to recover the bismuth remaining dissolved in the acid liquid, the latter is nearly neutralized with ammonia, when an additional quantity of bismuthous subnitrate will be precipitated thus: $\text{Bi}_3 \text{NO}_3 + 2 \text{NH}_4 \text{HO} = \text{BiONO}_3 + 2 \text{NH}_4 \text{NO}_3$, nitrate of ammonium being formed at the same time. Under no consideration must the solution be allowed to become neutral, lest the other metals (iron, copper, etc.) which may be present would likewise be precipitated; the ammonia should be added in a thin stream and with constant stirring, to avoid even the partial formation of the hydrate of any of the metals, which, particularly towards the close of the process, would again be converted into nitrate with difficulty.

Properties and Tests.—Subnitrate of bismuth is a heavy, white powder, in minute crystalline scales, and of a somewhat satiny appearance. It has a faintly acid odor and taste, and, when moistened on litmus paper, a decidedly acid reaction. It is entirely soluble, without effervescence, in nitric acid, and the solution yields no precipitate with

dilute sulphuric acid, or with solution of silver nitrate (absence of lead and chlorides). When mixed with sulphuric acid diluted with an equal bulk of water, it dissolves, and the solution acquires a black color on the addition of ferrous sulphate (presence of nitrates). It should be entirely free from arsenic, or contain only traces of that metal, so that a small portion of it when treated by Fleitmann's test, produces merely a gray stain upon the filtering paper moistened with solution of silver nitrate. When heated to redness, it loses about twenty per cent. of its weight, bismuthous oxide, Bi_2O_3 , remaining behind; its formula would require a loss of 23.5 per cent.

Preparation for Homœopathic Use.—The pure subnitrate of bismuth is prepared by trituration as directed under Class VII.

BLATTA AMERICANA, Lamarck.

Synonym, Kakerlat Americana, *Sars.*

Class, Insecta.

Order, Orthoptera.

Family, Blattina.

Common Name, Great American Cockroach.

The Blatte Americana, which is very common in Brazil, where it inhabits human dwellings, is an orthopterous insect, with an elongated, oval, rather flat body, from twelve to sixteen lines in length, of a brown-red which becomes paler under the belly. The prothorax is smooth, shining, of an ochre-yellow, with two large brown spots, which are sometimes united in one. In the male the elytra reach beyond the belly by a few lines; in the female they are a little shorter. They are marked with numerous longitudinal streaks which bifurcate near the dotted margin terminating the elytra. The wings are striate and reticular, of the length of the elytra. The antennæ which are longer than the body, exhibit at their base a small yellowish point. The feet are provided with black prickles and terminate in a tarsus with five articulations.

Preparation.—The live animal is crushed and triturated, as directed under Class IX.

BOLETUS LARICIS, Linn.

Synonyms, Agaracus Laricis. Fungus Lancis. Boletus Purgans. Polyporus Officinalis, *Fries.*

Nat. Ord., Fungi.

Common Names, Larch Agaric. Larch Boletus. Purging Agaric. White Agaric.

This is a fungus growing on the larch-tree of the old world. It is of various sizes, from that of the fist to that of a child's head (or even larger), hard and spongy, externally brownish or reddish; but, as found in commerce, it is deprived of its exterior coat, and consists of a light, white, spongy, somewhat farinaceous, friable mass, which, though capable of being rubbed into powder upon a sieve, is not easily pulverized in the ordinary mode, as it flattens under the pestle.

Preparation.—The dried fungus is covered with five parts by weight of alcohol, and having mixed it well, it is poured into a well-stoppered bottle, and allowed to remain eight days in a dark, cool place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{10}$.

Dilutions must be prepared as directed under Class IV.

Triturations of the dried fungus are prepared, as directed under Class VII.

BOLETUS SATANAS.

Synonym, Satanic Boletus.

Nat. Ord., Fungi.

Common Name, Satan's Fungus.

This fungus is found in forests, in summer and autumn. Cap thick, dense, of a pale yellow; orifice of the little tubes dark-red; stem big, dark-red, the upper portion furnished with bars.

According to Phœbus, it is a variety of the *Boletus Luridus*.

Preparation.—The fresh fungus is prepared by trituration, as directed under Class IX.

BONDONNEAU.

Bondonneau Mineral Water. (Saintes-Fontaines).

Chemical Analysis.

In one liter, there was contained:

Free Sulphuric Acid, a trace, but it is very perceptible at the spring.		
Free Carbonic Acid,	$\frac{2}{3}$	the volume of water.
Bicarbonate of Lime,	}	0.390 grammes.
Bicarbonate of Magnesia,		
Bicarbonate of Soda,		
Potash salts,		0.006 "
		a trace.
Sulphates (probably anhydrous) of	{	0.043 "
Soda,		
Lime,		
Magnesia,		
Chloride of Sodium,		0.030 "
Alkaline, Iodides and Bromides,		0.008 "
Arsenates,		a trace.
Sesquioxide of Iron with Manganese,		0.002 "
Silica and Alumina,		0.128 "
Earthy Phosphates,		a trace.
Nitrogenized organic matters,		an uncertain amount.

Preparation.—If potencies are required, use distilled water for first and second dilutions, alcohol for third and higher potencies.

BORAX.

Synonyms, Natrum Biboracicum. Boras Sodicus. Sodii Boras. Borate of Sodium.

Present Name, Sodie Biborate.

Common Name, Borax.

Formula, $\text{Na}_2\text{B}_4\text{O}_7 \cdot 10 \text{H}_2\text{O}$,

Molecular Weight, 382.

Origin and Preparation of Borax.—Borax is found as *tincal* in Persia, Thibet and other localities, as a saline incrustation on the shores of certain lakes, and as a crystalline deposit at the bottom of the borax lake in California. The incrustation and the deposit are continually renewed by crystallization from the lake waters as fast as the borax is removed. Tincal requires to be washed with a solution of caustic soda for effecting the removal of fatty matter with which the crystals are covered and, on being afterwards recrystallized from water yields borax.

Borax is also prepared from various native borates which are found in certain parts of South America, Europe and Asia, and which are known as the minerals *boracite*, *borosodocalcite*, *cryptomorphite*, etc. These consist of boracic acid combined in varying proportions with sodium, calcium and magnesium, and mixed with sulphates, chlorides and silica, and yield borax on being treated with carbonate of sodium and after recrystallization from water.

The crater of the Liparian island of Volcano, situated north of Sicily, contains a deposit of *boracic acid*; and the same acid is found in the vapors which issue from fissures in the volcanic rocks of Tuscany in Italy. To obtain this acid, a series of basins or *lagoons* are constructed on the side of the mountain, either by excavation or masonry, so as to surround the clefts in the rocks. The basin is then filled with water from a mountain stream; the hot vapors in passing through the water yield to it boracic acid, and heat the water at the same time. The solution of boracic acid thus obtained is passed from one basin to another lower one, subsequently into evaporating pans, and finally into vats, where the acid is deposited. The crude boracic acid, of which 178,798 pounds were imported in 1877-1878, is converted into borax by preparing a solution of 13 parts of crystallized carbonate of sodium in 15 or 16 parts of water, heating to boiling, and adding gradually 12 parts of the boracic acid; after combination has been effected, the liquid is permitted to settle, and drawn off clear into lead-lined vats where it crystallizes. The product thus obtained requires to be recrystallized to fit it for medicinal uses and for the arts. About 3,500 pounds of borax are annually imported, but much larger quantities are manufactured in the United States.

Properties.—Borax forms large, colorless, hexahedral, flattened crystals, which are transparent and, in dry air, effloresce superficially and become opaque. When heated it gives off its water of crystallization and is converted into a light, white, spongy mass, which at a red heat melts and, on cooling, forms a transparent glass. Borax has the specific gravity 1.72, has a weak alkaline reaction, is insoluble in alco-

hol, but dissolves in glycerin and in water. The glycerin solution imparts a green color to flame (Senier and Lowe, 1878). According to Poggiale, 100 parts of water dissolve at 10° C. (50° F.), 4.65 parts, at 20° C. (68° F.), 7.88 parts, at 30° C. (84° F.), 11.90 parts, at 40° C. (104° F.), 17.90 parts, and at 100° C. (212° F.), 201.43 parts of crystallized borax. If a saturated solution of borax is prepared at an elevated temperature, and kept at a temperature exceeding 56° C. (133° F.), borate of sodium containing 5 H₂O will crystallize in octohedral crystals, which are harder than borax. A cold solution of borax absorbs considerable quantities of carbonic acid and sulphuretted hydrogen, both gases being again expelled on heating and evaporating the liquid.

Composition.—The water of crystallization amounts to 47.12 per cent.; Na₂O to 16.23, and B₂O₃ to 36.65 per cent.

Tests.—The solution of borax is not colored or precipitated by sulphuretted hydrogen (absence of *heavy metals*), and does not yield any precipitate with carbonate of sodium (salts of *calcium*, etc.), nor, if sufficiently diluted, with barium chloride (*sulphate* and *phosphate*), or with nitrate of silver (*chlorides*). If a mineral acid is added to a hot solution of borax, on cooling, a scaly crystalline precipitate is obtained, the alcoholic solution of which burns with a green flame. 191 grains dissolved in 10 fluidounces of distilled water require for saturation 1,000 grain-measures of the volumetric solution of oxalic acid.

Preparation for Homœopathic Use.—One part by weight of pure borax is dissolved in ninety-nine parts by weight of distilled water.

Amount of drug power, $\frac{1}{165}$.

Dilutions must be prepared as directed under Class V— β .

Triturations of pure borax are prepared as directed under Class VII.

BORRAGO OFFICINALIS, Linn.

Nat. Ord., Boraginaceæ.

Common Name, Borage.

This plant is found growing in waste ground, near habitations, in England and the Channel Islands only, and is very rare. Its root is annual or biennial. Stem one to two feet high, stout, succulent, leafy, branched. Leaves waved or sinuate-toothed, subacute; radical leaves four to six inches long, ovate-lanceolate, petioles broad, winged; cauline sessile or contracted towards the auricled base, upper oblong. Cymes axillary and terminal, few-flowered, branched; pedicels one to one and a half inch long, decurved; bracts linear or lanceolate. Calyx-lobes subulate-lanceolate. Corolla three-fourths of an inch in diameter, bright blue; lobes triangular-ovate. Anthers purple-black, spurred at the back. Nutlets one-sixth of an inch long, rugose.

Preparation.—The fresh leaves are chopped and pounded to a pulp and pressed out *lege artis* in a piece of new linen. The expressed juice is then, by brisk agitation, mingled with an equal part by weight of alcohol. This mixture is allowed to stand eight days, in a well-stopped bottle, in a dark, cool place, and then filtered.

Drug power of tincture, $\frac{1}{4}$.

Dilutions must be prepared as directed under Class I.

BOVISTA.

Synonyms, Bovista Nigrescens. Fungus Ovatus. Lycoperdon Bovista, *Linn.*

Nat. Ord., Fungi.

Common Names, Puff-ball. Bull-fist. Puck-fist. Puck-ball. Puffin. Bunt. Devil's Snuff-box. Fuzz-ball.

Throughout the whole year the puff-ball is found, but especially in the beginning of autumn, on the pasture grounds and dry meadows of Europe. Nearly as round as a ball it is at the base narrowed to form a thick, foldy stalk. It is of variable size, between a diameter of one inch to one foot; when young it is white, later of a dirty yellow color, finally changing to umber-brown.

Preparation.—The entire fungi collected in August or September are bruised and weighed. Then five parts by weight of dilute alcohol are poured over it, and having been put into a well-stoppered bottle, it is allowed to remain eight days in a dark, cool place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{16}$.

Dilutions must be prepared as directed under Class IV, except that dilute alcohol is used for the 1x and 2x, and 1 dilutions.

Triturations are prepared from the ripe brown-black powder, as directed under Class VII.

BRACYHGLOTTIS REPENS.

Common Name, Puka-Puka.

This is usually a shrub, though sometimes it has the appearance of a tree twenty feet in height, growing in the northern island of New Zealand. It has broad, indented, glossy leaves, downy on the under surface. Its flowers are large, clustered and fragrant.

Preparation.—Equal parts of the fresh leaves and flowers are chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one sixth part of it, the rest of the alcohol is added. After having stirred the whole well, and having poured it into a well-stoppered bottle, it is allowed to stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Amount of drug power, $\frac{1}{8}$.

Dilutions must be prepared as directed under Class III.

BRANCA URSINA.

Synonyms, Acanthus Vulgaris. Heracleum Sphondylium, *Linn.*

Nat. Ord., Umbelliferae.

Common Names, Bear's Breech. Cow-parsnip. Hogweed. Masterwort.

This plant is found all over Europe, in meadows, and on the borders of woods. The root is thick, fusiform, branchy, yellowish without, whitish within; stem from three to six feet high, erect, furrowed, covered with stiff hairs, fistulous, branchy at the top; leaves pinnate and full of asperities; leaflets divided. Umbels large, of about twenty rays, the outer petals much larger than the others. Carpels nearly orbicular, three or four lines long; the vittas very conspicuous. When young, this plant contains a juice which is sweetish to the taste; when older, the juice becomes acrid, of a bitter taste, and biting; when applied to the skin, it causes it to swell, and produces even inflammation and ulcerations.

Preparation.—The fresh plant, at time of flowering, is chopped and pounded to a fine pulp and pressed out *lege artis* in a piece of new linen. The expressed juice is then, by brisk agitation, mingled with an equal part by weight of alcohol. This mixture is allowed to stand eight days in a well-stoppered bottle, in a dark, cool place, and then filtered.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class I.

BRAYERA ANTHELMINTICA, Kunth.

Synonyms, Banksia Abyssinica, Bruce. Hagenia Abyssinica, Lamark.

Nat. Ord., Rosaceæ.

Common Names, Koosso or Kousoo. Kosbo Sika.

This is a tree about twenty feet high, growing on the table-land of Abyssinia, at an elevation of not less than six or seven thousand feet. The branches exhibit circular cicatrices, left by the fallen leaves. These are crowded near the ends of the branches, large, pinnate, sheathing at the base, with opposite, lanceolate, serrate leaflets, villose at the margin, and nerved beneath. The flowers are tinged with purple, pedicelled, with an involucre of four roundish, oblong, obtuse, membranous bractes, and are arranged in fours, upon hairy, flexuous, bracteate peduncles, with alternate branches. They are small and of a greenish color, finally becoming purple. The flowers have a fragrant balsamic odor; and the taste, hardly perceptible at first, becomes in a short time somewhat acrid and disagreeable.

Preparation.—The dried blossoms are finely powdered, and covered with five parts by weight of alcohol, and allowed to remain eight days in a well-stoppered bottle, in a dark, cool place, and shaken twice a day. The tincture is then poured off, strained and filtered.

Drug power, $\frac{1}{16}$.

Dilutions must be prepared as directed under Class IV.

Triturations are prepared from the dried blossoms, as directed under Class VII.

BROMIUM.

Synonyms, Brominium. Murina.

Common Name, Bromine.

Symbol, Br.

Atomic Weight, 80.

A liquid non-metallic element, obtained from sea-water and from some saline springs.

Origin and Preparation of Bromine.—Bromine does not exist in the free state, but is found widely distributed in nature, the bromides usually accompanying chlorides. It is more particularly found in sea-water, in the waters of Kreuznach, Kissingen, and other mineral springs, but is now obtained in considerable quantities from the mother-liquors of many salt works in the United States and at Stassfurth, Germany. These mother-liquors, which have been freed by crystallization as much as possible from other salts, chlorides and sulphates, contain the bromine, usually in combination with magnesium or calcium. These compounds are decomposed either by heating their solution with black oxide of manganese and hydrochloric acid, or by warming it to between 45° and 50° C. (113° and 122° F.) while chlorine gas is being passed into it; the bromides are at once decomposed; $Mg Br_2 + Cl_2$ forms $Mg Cl_2 + Br_2$; the bromine volatilizes, and is condensed under a small quantity of water, which is contained in a deep Woulf's bottle kept cool by water, while that portion of bromine which escapes condensation is conducted into a solution of caustic potassa contained in an open bottle; this solution, when it has nearly lost its alkaline reaction, is subsequently utilized for the preparation of potassium bromide. The mother-liquors, as obtained in Western Pennsylvania and West Virginia, yield about one half per cent. of bromine, or the brine about one pound of bromine to thirteen bushels of salt. The production of the Ohio and Kanawha valleys amounts to about 130,000 pounds of bromine annually, in addition to which from 800 to 1000 pounds are manufactured in Pennsylvania (S. S. Garrigues, 1873). According to Wellcome (1877) about 1000 pounds are daily manufactured in the United States.

Properties.—It is a dark brown-red very volatile liquid, which exhales deep orange-colored vapors. Its odor, which is suggestive of chlorine and iodine, is strong and disagreeable. It boils at 63° C. (145.4° F.) (Pierre); Balard and others give the boiling point as low as 47° C. (117° F.). At 15° C. (59° F.) its specific gravity is 2.97, and at the freezing point of water 3.187. It congeals at about -20° C. (4° F.), at the same time increasing its volume about six per cent. It destroys cork, wood, etc., bleaches coloring principles, and alters or destroys most odorous organic compounds. It dissolves in thirty-three parts of water, and in less of alcohol and ether; the solutions are bleached rapidly in the sunlight, hydrobromic acid being formed. Bromide of potassium increases the solubility of bromine in water.

Impurities.—Iodine at present does not often form an impurity of bromine; its presence may be detected by adding the bromine to solution of soda until a permanent yellow color is produced, when the

addition of a cold solution of starch will cause the blue color of iodide of starch to appear. Bromide of carbon is often present in crude bromine and may be removed by careful rectification, its boiling point being considerably higher than that of bromine.

Preparation for Homœopathic Use.—One part of pure bromine is dissolved in ninety-nine parts by weight of distilled water.

Amount of drug power, $\frac{1}{100}$.

Dilutions must be prepared as directed under Class V— β , except that distilled water is used for dilutions to the 4x and 2, dilute alcohol for the next higher, and alcohol for all further dilutions.

BRUCEA ANTIDYSENTERICA.

Synonym, Angustura Spuria.

Nat. Ord., Apocynaceæ.

Common Name, False Angustura.

This is the bark of the tree *Strychnos Nux Vomica*, which is described under *Nux Vomica*.

Preparation.—The dried bark is pulverized and covered with five parts by weight of alcohol. Having poured it into a well-stoppered bottle, it is allowed to remain eight days in a dark, cool place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{10}$.

Dilutions must be prepared as directed under Class IV

BRUCINUM.

Synonym, Brucia.

Formula, $C_{23}H_{25}N_2O_4$.

An alkaloid, obtained from the seeds of *Strychnos Nux Vomica*, *Linn.*

Preparation of Brucia.—It is one of the by-products of the manufacture of strychnia, and in the officinal process for this alkaloid, is obtained from the mother-liquor and alcoholic washings, by neutralizing them with sulphuric acid, evaporating to crystallization, removing the mother-liquor, purifying the crystals by treatment with animal charcoal, precipitating with ammonia, and recrystallizing from boiling eighty per cent. alcohol; it contains then $4H_2O$.

Properties.—It is in crystals, resembling in appearance those of strychnia. It is without smell, but of a permanent, harsh, very bitter taste. It is soluble in 850 parts of cold water, 1.5 parts of alcohol, 7 parts of chloroform, and 70 parts of glycerin. It is soluble also in ammonia, creasote, very slightly so in volatile and fixed oils, and is insoluble in ether. It fuses without decomposition a little above $100^\circ C.$, and at a higher heat burns, leaving voluminous charcoal.

Tests.—In contact with strong nitric acid, brucia acquires a blood-red color, which changes to orange, and finally yellow; if now stannous chloride be added, a beautiful violet-red is the result. The compound thus produced, according to Roehre (1878), may be obtained in crys-

tals, which dissolve in water and mineral acids with a violet color. A compound of a similar color is obtained by using sulphurous acid, and lustrous brick-red needles are formed by using ammonium sulphide in place of stannous chloride. These reactions are not interfered with by the presence of a little strychnia. Commercial brucia generally contains traces of strychnia, as proven by Cownley (1876), and Shenstone (1877), and according to the latter, may be completely freed from it by partial precipitation, brucia being precipitated from its solutions by strychnia.

Preparation for Homœopathic Use.—The pure brucia is prepared by trituration, as directed under Class VII.

BRYONIA ALBA, *Linn.*

Synonyms, *Bryonia vera*. *Vitis Alba*.

Nat. Ord., Cucurbitaceæ.

Common Names, White Bryonia. Wild Hops.

Bryonia is a high climbing, perennial plant, growing in hedges and along fences, and is quite common in Germany and France. The perennial root of this plant is as thick as an arm, and at times even as large as the thigh; it is fleshy, succulent, branchy, of a yellowish-white color, circularly wrinkled without, acrid, bitter, disagreeable to the taste, and of a nauseating odor, which, however, disappears by desiccation. Its climbing stalk rises sometimes to the height of many feet; it is glabrous, creeping, channelled, and armed with spiral creepers; its leaves are alternate, angular, hispid, tuberculous on both sides, rough to the touch, palmated, five-lobed, the middle of which is trifid, elongated; flowers axillary, monœcious, in bunches; the male being supported on very long peduncles, the female larger than the male; calyx five-toothed, sharp; corolla five divisions; stamens five, of which four are united two and two by the filaments and the anthers, the fifth free; berries round, black, polyspermous.

Bryonia Alba was the variety Hahnemann used in his experiments, and great care must be taken not to confound it with *Bryonia Dioica*, which grows in the same localities, but mostly in England.

Preparation.—The fresh root, gathered before the plant is in bloom, is chopped and pounded to a fine pulp, and pressed out *lege artis* in a piece of new linen. The expressed juice is then, by brisk agitation, mingled with an equal part by weight of alcohol. This mixture is allowed to remain for several weeks (to deposit amylum, with which it abounds), in a well-stoppered bottle, in a dark, cool place, and then filtered.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class I.

BUCHU.

Synonyms, *Barosma Crenata*, *Kunze*. *Diosma Crenata*, *Linn.*, *De Candolle*.

Nat. Ord., Rutaceæ.

Common Name, Buchu.

This is a native of Central Africa. It is a slender shrub, with smooth somewhat angular branches, of a purplish color. The leaves are opposite, ovate or obovate, acute, serrated and glandular at the edge, coriaceous, and full of small pellucid dots on the under surface. The flowers are white or of a reddish tint, and stand solitarily at the end of short, lateral, leafy shoots.

Preparation.—The dried leaves are finely powdered, and covered with five parts by weight of alcohol; having poured this into a well-stoppered bottle, it is allowed to remain eight days in a dark, cool place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{10}$.

Dilutions must be prepared as directed under Class IV.

BUFO.

Synonyms, Cinereus. *Rana Bufo*.

Class, Amphibia.

Order, Anura.

Family, Bufonidæ.

Common Name, Toad.

This well-known animal is a native of North America, Europe, Southern Asia, and Japan.

Preparation.—The live animal is fastened to a slab of cork by four strong pins stuck through the webs of the feet. Then the poles of an induction apparatus in action are slowly drawn over the back of the animal, whereupon the poison very soon issues from the dorsal glands. This is removed with a small hornknife, and triturated according to Class VIII, but in the proportion of 1 part to 1000 parts of sugar of milk, the preparation being equal to the 3x trituration.

BUFO SAHYTIENSIS, *Nobis*.

Synonym, Bufo Agua.

Class, Amphibia.

Order, Anura.

Family, Bufones.

Common Name, Toad of South America.

This toad is common in South America; it inhabits swamps and marshy regions. It is sometimes as large as two fists, though its size varies a good deal. It is readily known by its enormous rhomboidal parotids, whence it sends forth a large quantity of poison. Its head is flat, triangular, more broad than long; it shows a strong osseous edge, commencing at the tip of the muzzle, thence stretching towards the inner angle of the eye, round this organ, and finally terminating behind the lids. The eye and the tympanic wall are very large. The trunk, which is very large anteriorly, in consequence of the large development of the parotids, is covered, on each side of the dorsal spine with two irregular rows of large elliptical or conical bladders; sometimes there are such bladders on the sides. The anterior extremities do not

reach to the end of the trunk; the posterior extremities reach beyond the muzzle by the length of the fourth toe. The toes are rather flattened; the first toe is longer than the second. Its colors are various, consisting of a number of brown spots, which coalesce on the back and are separated on the abdomen by yellowish dots.

Preparation.—The saliva, obtained by irritating the animal, is prepared by trituration, as directed under Class VIII.

BUXUS SEMPERVIRENS, *Linn.*

Nat. Ord., Euphorbiaceæ.

Common Name, Box.

This evergreen shrub is much cultivated in this country as an ornamental plant, but is a native of Europe and Western Asia. Its leaves are ovate, narrower towards the apex than near the base, have a peculiar odor and a bitter and disagreeable taste.

Preparation.—The fresh leaves are chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, and having poured it into a well-stoppered bottle, it is allowed to stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{4}$.

Dilutions must be prepared as directed under Class III.

CACAO.

Synonym, *Theobroma Cacao*, *Linn.*

Nat. Ord., Sterculiaceæ.

Common Name, Cacao.

The cacao (often incorrectly called *cocoa*) or *chocolate tree*, is indigenous to Brazil and other parts of tropical America northward to Mexico, and is largely cultivated throughout the tropics. It is a medium-sized tree, with alternate, oblong-lanceolate, or lance-ovate, acute and entire leaves, and with pale pink, five-petaled flowers, which appear in clusters from the axils of old leaf-scars. The fruit is about six inches long, pear-shaped, with an elongated nipple-shaped apex, ten-furrowed, and while unripe, five-celled, and contains numerous seeds imbedded in a sweet, pulpy mass. The seeds are one-half or three-quarters of an inch long, ovate or oblong, somewhat flattened and vary in color, according to the manner in which they have been prepared, from brown-red to brown or grayish-brown. A prominent raphe runs along one edge of the seed from one end to the other, uniting the hilum and chalaza, and is divided at the latter into many branching nerves. The testa is thin, papery and fragile. The embryo has the shape of the seed, and consists of a small conical radical and two large oily cotyledons, which are strongly ribbed upon their face, and by the projecting folds of the inner seed coat, are divided from the back into numerous, small, irregular lobes, so that they readily break

into many angular pieces. The odor of the cacao seed is slight, but on warming is agreeably aromatic; their taste is oily, aromatic and bitterish.

Preparation.—Cacao seeds are prepared for use by removing them from the fruit and simply drying them, in which case they retain their astringent and bitter taste. These seeds are then prepared by trituration, as directed under Class VII.

CACTUS GRANDIFLORUS.

Synonym, *Cereus Grandiflorus*.

Nat. Ord., Cactaceæ.

Common Name, Night-blooming *Cereus*.

This well known flowering plant is a native of Mexico and the West India Islands. Its stems are cylindrical, furnished with five or six slightly prominent ribs, beset with small radiating spines. Its flowers are large and white, opening in the evening and withering before sunrise, and have a powerful odor of benzoic acid and vanilla.

Preparation.—The fresh flowers together with the youngest and tenderest stems, gathered from plants growing in their native country, are chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well and having poured it into a well-stoppered bottle, it is allowed to stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

CADMIUM METALLICUM.

Common Name, Cadmium.

Symbol, Cd.

Atomic Weight, 112.

Origin and Preparation of Cadmium.—This metal is found near Bishopstown, Scotland, in the form of sulphide, as the mineral Greenockite; but it is more frequently present in small quantities in some kinds of calamine, blends, and other zinc ores. Cadmium being more volatile than zinc, it is contained in the first portions obtained on the distillation of the latter metal, and its presence is indicated by the appearance of a brown flame, the so-called brown blaze, before the greenish-white flame of burning zinc is noticed. To obtain cadmium, the zinc, or the zinc oxide containing it, is dissolved in dilute sulphuric or muriatic acid, and the cadmium precipitated by metallic zinc. Or the acid solution is treated with sulphuretted hydrogen to precipitate the cadmium as yellow sulphide, which is used as a pigment under the name of *cadmia*; the sulphide is dissolved in strong hydrochloric acid, the solution precipitated by an excess of ammonium carbonate, to remove copper and traces of zinc, and the washed and dried precipitate mixed with lamp-black and distilled.

Properties.—Cadmium is a malleable and ductile metal, having the color of tin, and, like the latter, it emits a crackling sound when bent. It becomes brittle at 82° C. (180° F.), fuses near 315° C. (592° F.) (B. Wood, 1862), and volatilizes, according to Becquerel (1863), at 720° C. (1319° F.). In the presence of acids, cadmium slowly decomposes water, hydrogen being given off; but nitric acid dissolves the metal readily. The salts of cadmium are mostly white, those soluble in water have an acid reaction and a disagreeable metallic taste. Their solutions, treated with sulphuretted hydrogen or ammonium sulphhydrate, afford orange-yellow precipitates of Cd S , which is insoluble in an excess of the precipitant and in dilute acids and alkalis. Caustic alkalis produce white precipitates of $\text{Cd H}_2\text{O}_2$, which is soluble in ammonia, but not in potassa or soda. The soluble carbonate, phosphates and oxalates, and ferrocyanide of potassium produce white precipitates.

Tests.—The impurities likely to be present in metallic cadmium are mainly zinc and copper, the former of which is recognized by precipitating the solution in nitric acid with sulphuretted hydrogen, when the filtrate from the bright orange-yellow precipitate will yield a white precipitate on the addition of ammonia and ammonium sulphhydrate. When the solution in nitric acid is precipitated by slight excess of ammonium carbonate, the filtrate will have a blue color if copper be present.

Preparation for Homœopathic Use.—The pure metallic cadmium is prepared by trituration as directed under Class VII.

CADMIUM SULPHURICUM.

Synonym. Cadmii Sulphas.

Present Name. Cadmic Sulphate.

Common Name. Sulphate of Cadmium.

Formula, $3\text{Cd SO}_4 \cdot 8\text{H}_2\text{O}$.

Molecular Weight, 768.

Preparation of Sulphate of Cadmium.—Take of cadmium in small pieces a troyounce; nitric acid two troyounces; carbonate of sodium three troyounces; sulphuric acid four hundred and twenty grains; distilled water a sufficient quantity. To the cadmium and two fluidounces of distilled water, contained in a glass vessel, add by degrees the nitric acid, and, when the action slackens, apply a gentle heat until the metal is dissolved. Filter the solution, and, having dissolved the carbonate of sodium in six fluidounces of distilled water, mix the solutions thoroughly. Wash the precipitate obtained until the water passes tasteless, and dissolve it in the sulphuric acid diluted with four fluidounces of distilled water. Then evaporate the solution to one-third, and set it aside to crystallize. Lastly, dry the crystals on bibulous paper. In following this process, nitrate of cadmium is first formed, and then converted into cadmium carbonate by decomposition with sodium carbonate, the resulting precipitate, after thorough washing, being formed into cadmium sulphate by dissolving it in sulphuric acid.

Properties and Tests.—Sulphate of cadmium crystallizes in colorless rhombic prisms, which effloresce somewhat in the air. It dissolves in less than one and a half times its weight of water, and is insoluble in alcohol; at 100° C. (212° F.) it loses 11.8 per cent. (5 molecules) of water, and the remainder when heated nearly to redness. Its purity may be ascertained by precipitating the solution of 10 grains of the salt with dilute potassa solution, and after washing the precipitate, igniting it; it should weigh 5 grains. Or 10 grains of cadmium sulphate dissolved in water, and barium nitrate added in excess, yield a precipitate which, after washing and heating, should weigh 9.1 grains.

Preparation for Homœopathic Use.—The pure sulphate of cadmium is prepared by trituration, as directed under Class VII.

CAFFEIN.

Synonyms, Caffèia. Coffeinum.

Formula, $C_{16}H_{10}N_4O_4$.

Molecular Weight, 194.

Origin.—Caffèin was first discovered by Runge, and afterwards by Robiquet. According to Payen, it exists in coffee partly free, partly as a double salt, consisting of *chlorogenic acid*, combined with potassa and caffèin. The proportion of caffèin in coffee may be stated at from 0.75 to 1.0 per cent.

Preparation of Caffèin.—Exhaust bruised coffee by two successive portions of boiling water, unite the infusions, add acetate of lead in order to precipitate various principles accompanying the caffèin, filter, decompose the excess of acetate of lead in the filtered liquor by sulphuretted hydrogen, concentrate by evaporation, and neutralize with ammonia. The caffèin is deposited in crystals upon cooling, and may be purified by redissolving in water, treating with animal charcoal, and evaporating.

Properties.—Caffèin crystallizes, by the cooling of its concentrated solution, in opaque, silky, flexible needles, by slow and spontaneous evaporation, in long transparent prisms. It has a feebly bitter and disagreeable taste, is soluble in water, alcohol, and ether, melts when exposed to heat, and at a higher temperature sublimes, without residue, in needles analogous to those formed by benzoic acid. Caffèin is remarkable for containing a larger proportion of nitrogen than almost any other proximate vegetable principle, in this respect equalling some of the most highly animalized products. The present views of its composition are represented by the formula $C_{16}H_{10}N_4O_4$; and it is believed to be identical with *thein*, or the peculiar principle of tea. Notwithstanding its large proportion of nitrogen, caffèin is indisposed to putrefaction.

Tests.—Caffèin is precipitated from its aqueous solution by no reagent, except tannic acid and solution of iodide of potassium and mercury. When this solution, made by saturating iodide of potassium with red oxide of mercury, is added to a solution of caffèin, a precipitate is produced, which soon takes the form of white, shining, acicular crystals. This reaction is proposed as a test of caffèin by Prof. Dellfs;

for, though the same solution will precipitate the other alkaloids, the product is always amorphous. It is stated by M. Schwazenback that, if chlorine-water with caffein is evaporated, a red residue is obtained, which becomes yellow at a higher temperature, and is restored to its original red color by a drop of solution of ammonia.

Preparation for Homœopathic Use.—The pure caffein is prepared by trituration, as directed under Class VII.

CAHINCA.

Synonyms, Cainca. *Chiococca Racemosa*, *Jaquin*.

Nat. Ord., Rubiaceæ.

Common Name, Cluster-flowered Snowberry. David's Root.

This shrub grows in Brazil and the Antilles. Stem from five to ten feet high; leaves opposite, oval-pointed, entire; flowers pedunculated, whitish, axillary, in pendant bunches; fruit berriform; whitish, monospermous; root branchy, of a reddish-brown, consisting of cylindric pieces, from one and a half to two feet long, and of the thickness of a goose-quill or finger; it is fibrous, marked all along with furrows of a deep color, covered with brown bark, annular, thin, fleshy, epidermis of a dirty white. Beneath this fleshy part is found a white wood, which is the axis of the root. The epidermis of the bark is of a resinous aspect when broken, of a disagreeable taste, bitter, a little acrid and slightly astringent, producing a roughness in the throat; the woody part has neither taste nor odor. The odor of the root is acrid, volatile, disagreeable, somewhat like that of valerian.

Preparation.—The dried root-bark, is finely powdered, covered with five parts by weight of alcohol, and allowed to remain eight days, in a well-stoppered bottle, in a dark, cool place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{10}$.

Dilutions must be prepared as directed under Class IV.

CALADIUM.

Synonyms, Caladium Seguinum. *Arum Seguinum*, *Linn.*

Nat. Ord., Araceæ.

Common Names, Dumb Cane. Poisonous American Arum. Poisonous Pediveau.

This plant is a native of South America, growing on the wet prairies in the neighborhood of Paramaribo. Its stem is from five to six feet high, more than one inch thick, round, knotty, and abounding with milky juice. Its leaves are ovate-oblong, smooth, at the apex neared, petioles above canaliculate and clasping, sheath of the flowers pale green, its inner side purple, spadix yellow. The juice of this plant leaves an indelible stain on linen, and is so caustic that, if put upon the tongue or in the mouth, it produces swelling, inflammation, and loss of speech.

Preparation.—The fresh root is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and

after mixing the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, and having poured it into a well-stoppered bottle, it is allowed to stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{6}$.

Dilutions must be prepared as directed under Class III.

CALCAREA ACETICA.

Synonym, Calcium Acetate.

Present Name, Calcic Acetate.

Common Name, Acetate of Lime.

Formula, $\text{Ca } 2 \text{ C}_2 \text{ H}_3 \text{ O}_2$.

Hahnemann's Preparation of Acetate of Lime.—Boil crude, well-washed oyster-shells for an hour in pure rain-water, then break into fragments, without using any metallic instrument, and dissolve in dilute acetic acid, heating up to the boiling point, until complete saturation is gradually effected. Filter and reduce to one-fifth by evaporation. The solution, of a dark yellow, after a time precipitates a dark-colored glutinous substance, whereby it obtains a lighter yellow color. To this lighter-colored liquid add one-half its bulk by measure of pure alcohol.

Amount of drug power, $\frac{1}{10}$.

Dilutions must be prepared as directed under Class V—*a*.

CALCAREA ARSENICOSA.

Synonyms, Calcii Arsenias. Calcarea Arsenica.

Present Name, Tricalcic Diarsenate.

Common Name, Arseniate of Lime.

Formula, $\text{Ca}_3 \text{ 2As O}_4$.

Preparation of Arseniate of Lime.—Distil four parts of powdered arsenious acid with a mixture of twelve parts nitric acid and one part muriatic acid in a retort till the residue is dry, which is but little glowd. The acid (residue) obtained in this way and dissolved again in ten times its quantity of water, is neutralized by carbonate of potash, forming arseniate of potash in solution, which is decomposed by the addition of a solution of calcic chloride as long as a white precipitate is formed. This should be carefully washed and dried.

Properties and Tests.—Arseniate of lime is a light, white amorphous powder, insoluble in water, but readily soluble in diluted nitric acid. The solution continues clear when an excess of acetate of soda is added to it, but gives a white precipitate on the subsequent addition of oxalate of ammonia. A small quantity boiled with an excess of caustic soda and filtered, gives, when exactly neutralized by nitric acid, a brick-red precipitate on the addition of solution of nitrate of silver.

Preparation for Homœopathic Use.—The pure arseniate of lime is prepared by trituration, as directed under Class VII.

CALCAREA CARBONICA.

Synonyms, Calcii Carbonas. Calcarea Ostrearum, *Hering*.

Present Name, Calcic Carbonate.

Common Names, Carbonate of Lime. Impure Carbonate of Lime.

Formula, Ca CO_3 .

Molecular Weight, 100.

Origin and Preparation of Hahnemann's Carbonate of Lime.—Cleaned, thick oyster-shells are broken into small pieces, and the inner snow-white portions carefully selected and powdered.

Preparation for Homœopathic Use.—The powdered oyster-shell (obtained as described above) is prepared by trituration as directed under Class VII.

CALCAREA CAUSTICA.

Synonym, Calcis Hydras.

Present Name, Calcic Hydrate.

Common Name, Slaked Lime.

Formula, $\text{Ca HO}_2 \text{O}_2$.

Molecular Weight, 74.

Preparation of Slaked Lime.—This is prepared by burning Carrara marble (carbonate of lime) in a covered crucible until the slaked product no longer effervesces on the addition of hydrochloric acid; when cold it is placed in a porcelain capsule, and slaked by the addition of half its weight of distilled water.

Properties.—Slaked lime forms a soft white powder of spec. grav. 2.08, and of a strong alkaline taste and reaction.

Preparation for Homœopathic Use.—One part of caustic (slaked) lime is drenched with five parts of distilled water in a warm bottle well stoppered, and left standing till cold. This is then well shaken, and thereto five parts of alcohol are added and again well shaken. After several days, during which the mixture has been frequently shaken, the clear liquid is put into vials, and well protected from air. It must be rejected as soon as it has attracted carbonic acid, and prepared anew.

Amount of drug power, $\frac{1}{10}$.

Dilutions must be prepared as directed under Class VI—*a*.

Triturations should not be prepared, as during trituration carbonic acid is absorbed from the atmosphere, forming carbonate of lime.

CALCAREA CHLORATA.

Synonyms, Calx Chlorinata. Calx Chlorata.

Common Names, Chlorinated Lime. Bleaching Powder.

Preparation and Composition of Chlorinated Lime.—Well-slaked lime, free from dampness, is rubbed through a sieve, and the powder thus obtained is spread upon shelves which are placed in boxes or chambers, into which chlorine gas is conducted from the top as long as it is absorbed.

The oldest view concerning the composition of chlorinated lime admits of a direct combination and the formation of $\text{Ca O Cl}_{2.3}$, and, since the whole amount of slaked lime cannot be thus converted, a portion of it was supposed to form a double compound with it, having the composition $2(\text{Ca O Cl}_2 \cdot \text{H}_2 \text{O}) + \text{Ca H}_2 \text{O}_2$. But it seems now to be pretty generally admitted that a decomposition takes place, the precise nature of which is by no means fully established.

Properties.—Chlorinated lime is a whitish powder, or in friable lumps, dry or but slightly damp, with a feeble odor of chlorine, partly soluble in water, and wholly soluble in dilute hydrochloric acid, with the evolution of chlorine and the production of calcium chloride; $\text{Ca 2Cl O. Ca Cl}_2 + 4\text{H Cl}$ yields $2\text{Cl}_2 + 2\text{Ca Cl}_2 + 2\text{H}_2 \text{O}$. Distilled with alcohol, wood-spirit, some volatile oils, etc., chlorinated lime generates chloroform, and when it is mixed with certain organic substances in the dry state, a gradual decomposition and development of heat take place, and may result at last in an explosion.

Tests.—Chlorinated lime may contain a great excess of lime, from imperfect impregnation with the gas. This defect will be shown by the large proportion insoluble in water. If it contain much chloride of calcium, it will be quite moist, which is always a sign of inferior quality. When long and insecurely kept, it deteriorates from the gradual formation of chloride of calcium and carbonate of calcium. When forty grains of it (chlorinated lime), triturated with a fluid ounce of distilled water, are well shaken with a solution of seventy-eight grains of crystallized sulphate of protoxide of iron, and ten drops of sulphuric acid in two fluid ounces of distilled water, a liquid is formed which does not yield a blue precipitate with ferridecyanide of potassium. It is wholly dissolved by dilute muriatic acid with the escape of chlorine. Its solution quickly destroys vegetable colors.

Preparation for Homœopathic Use.—One part by weight of chlorinated lime is dissolved in nine parts by weight of distilled water, and filtered through calico.

Amount of drug power, $\frac{1}{16}$.

Dilutions must be prepared as directed under Class V—*a*.

CALCAREA FLUORICA.

Synonyms, Calcii Fluoridum. Calcium Fluoride.

Present Name, Calcic Fluoride.

Common Name, Fluor-Spar.

Symbol, Ca F_2 .

Origin and Properties of Calcium Fluoride.—It occurs in nature as the mineral fluor-spar, beautifully crystallized, of various colors, in lead-veins, the crystals having commonly the cubic, but sometimes the octohedral form, parallel to the faces of which latter figure they always cleave. Some varieties, when heated, emit a greenish, and some a purple phosphorescent light. The fluoride is quite insoluble in water, but is decomposed by sulphuric acid, generating hydrofluoric acid.

Preparation for Homœopathic Use.—Selected pieces of crys-

tallized fluor-spar are prepared by trituration, as directed under Class VII.

CALCAREA HYPOPHOSPHOROSA.

Synonyms, Calcii Hypophosphis. Calcis Hypophosphis. Hypophosphite of Calcium.

Present Name, Calcic Hypophosphite.

Common Name, Hypophosphite of Lime.

Formula, $\text{Ca } 2 \text{ PH}_2\text{O}_2$.

Molecular Weight, 170.

Preparation of Hypophosphite of Calcium.—Hypophosphite of calcium is obtained by heating phosphorus with milk of lime, inflammable phosphoretted hydrogen being given off, namely, $3 (\text{Ca} 2 \text{HO}) + 6 \text{H}_2\text{O} + 4 \text{P}_2$ yields $3 (\text{Ca} 2 \text{PH}_2\text{O}_2) + 2 \text{PH}_3$. Procter (1858) uses a deep boiler, in which a uniform milk is made with four pounds of burned lime and five gallons of water; one pound of phosphorus is added, and the whole boiled, boiling water being added from time to time to preserve the measure, until the phosphorus has been all oxidized and the strong odor of phosphoretted hydrogen has disappeared. The mixture is filtered, the residue washed with water, the mixed filtrates evaporated to six pints, filtered from the hydrate and carbonate of calcium, and again evaporated and crystallized or granulated.

Properties.—Hypophosphite of calcium crystallizes in thin flexible scales, but is usually met with as a white, crystalline salt, with a pearly lustre and a bitter, nauseous taste. Heated to redness in a retort it ignites, evolves water, spontaneously inflammable phosphoretted hydrogen and a little phosphorus, and leaves nearly 80 per cent. of a reddish residue, containing a little amorphous phosphorus and calcium pyrophosphate. The salt dissolves in six parts of cold and in a slightly less amount of boiling water; it is insoluble in strong and but slightly soluble in dilute alcohol.

Tests.—Its complete solubility in water proves the absence of phosphate and carbonate of calcium. The solution is not precipitated by lead acetate (absence of soluble phosphate) or by acidulated barium chloride (absence of sulphate). It yields white precipitates with silver nitrate and mercuric chloride, both turning dark when heated, from a reduction to the metallic state. It gives a blue precipitate with ammonium molybdate, the precipitate appearing green, if phosphate is present, from the admixture with yellow phosphomolybdate.

Preparation for Homœopathic Use.—The pure hypophosphite of calcium is prepared by trituration, as directed under Class VII.

CALCAREA JODATA.

Synonyms, Calcarea Hydriodica. Calcii Iodidum. Calcium Iodatum. Iodide of Calcium.

Present Name, Calcic Iodide.

Common Name, Iodide of Lime.

Formula, CaI_2 .

Molecular Weight, 294.

Preparation of Iodide of Calcium.—The salt is obtained on dissolving slaked lime in hydriodic acid and evaporating. Or three parts of iodine are digested with sufficient iron and water until a green solution of ferrous iodide is obtained. The liquid is filtered and mixed with one part of iodine, and after this has been dissolved, it is boiled with milk of lime, prepared with one part of burnt lime, until the iron has been precipitated; the liquid is then filtered and evaporated.

Properties.—Iodide of calcium is a white salt which crystallizes with difficulty in pearly scales. It is freely soluble in alcohol and water, and is very deliquescent. 100 parts of water dissolve at 0°C . (32°F .) 192, at 20°C . (68°F .) 204, and at 92°C . (197.6°F .) 435 parts of the salt. On exposure to the air the solution is partly decomposed, carbonate of calcium being precipitated.

Tests.—The solution yields a white precipitate with oxalate of ammonium, and a bright red one with corrosive sublimate. On mixing the solution with sulphurous acid and sulphate of copper in excess, and heating the mixture, a grayish precipitate of cuprous iodide is produced, and the filtrate yields no precipitate on the addition of nitrate of silver (absence of chloride and bromide).

Preparation for Homœopathic Use.—The pure iodide of calcium is prepared by trituration, as directed under Class VII.

CALCAREA MURIATICA.

Synonyms, Calcii Chloridum. Chloride of Calcium. Muriate of Lime.

Present Name, Calcic Chloride.

Common Name, Chloride of Lime.

Formula, Ca Cl_2 .

Molecular Weight, 111.

Chloride of Calcium prepared by fusion.

Preparation of Chloride of Calcium.—This compound is a by-product in many chemical processes, among others in the official process for solution of ammonia. It may be formed by neutralizing hydrochloric acid with marble or other calcium carbonate; $\text{Ca CO}_3 + 2 \text{H Cl}$ yields $\text{Ca Cl}_2 + \text{CO}_2 + \text{H}_2 \text{O}$. Iron being usually contained in these native carbonates, it is removed by digesting the solution with chlorinated lime and slaked lime, by which the iron is first converted into ferric chloride and then precipitated as ferric hydrate. The filtrate, which will be found to have an alkaline reaction, is neutralized with hydrochloric acid, evaporated and dried at a temperature of about 200°C . (about 400°F .).

Properties and Tests.—Calcium chloride is in white, dry, but very deliquescent masses. It dissolves in alcohol and in two parts of water, the latter solution not being precipitated by the addition of lime-water (absence of soluble carbonate), of ammonia (absence of aluminium, iron, etc.), of barium chloride (absence of sulphates), or of ferrocyanide of potassium (absence of iron, etc.). Hydrochloric acid added to the salt, evolves no chlorine odor (absence of hypochlorites). The hot concentrated aqueous solution yields, on cooling, large crystals of the formula $\text{Ca Cl}_2 \cdot 6 \text{H}_2 \text{O}$, and when evaporated to dryness at a temperature not exceeding 150°C . (302°F .) a crystallized powder, $\text{Ca Cl}_2 \cdot 2 \text{H}_2 \text{O}$, is obtained, which, on being mixed with two-thirds its weight of snow produces a temperature of -45°C . (-49°F .).

Preparation for Homœopathic Use.—One part by weight of pure chloride of calcium is dissolved in nine parts by weight of distilled water.

Amount of drug power, $\frac{1}{16}$.

Dilutions must be prepared as directed under Class V—*a*.

CALCAREA OXALICA.

Synonyms, Calcii Oxalas. Calcium Oxalicum. Oxalate of Calcium.

Common Name, Oxalate of Lime.

Formula, $\text{Ca O} \cdot \text{C}_2 \text{O}_3$.

Molecular Weight, 64.

Preparation of Oxalate of Calcium.—It is formed whenever a strong solution of oxalic acid is added to a solution of a calcium salt; it falls as a white powder, which should be well washed with distilled water, and then dried on a water-bath.

Properties and Tests.—It is but little soluble in dilute hydrochloric, and quite insoluble in acetic acid. Nitric acid dissolves it easily. When dried at 100°F ., it retains a molecule of water, which may be driven off by a rather higher temperature. Exposed to a red heat in a closed vessel, it is converted into calcium carbonate, with escape of carbon monoxide.

Preparation for Homœopathic Use.—The pure oxalate of calcium is prepared by trituration, as directed under Class VII.

CALCAREA PHOSPHORICA.

Synonyms, Calcii Phosphas Præcipitata. Calcis Phosphas. Precipitated Phosphate of Calcium.

Present Name, Calcic Phosphate.

Common Name, Phosphate of Lime.

Formula, $\text{Ca}_3 2 \text{PO}_4$.

Molecular Weight, 310.

Preparation of Precipitated Phosphate of Lime.—That used for the proving was a mixture of the basic and other phosphates of lime, obtained by Dr. Hering (Correspondenzblatt, 1837) by dropping dilute phosphoric acid into lime-water, so long as a white precipi-

tate was formed; this precipitate was washed with distilled water, and dried on a water-bath.

Preparation for Homœopathic Use.—The phosphate of lime, obtained as described above, is prepared by trituration as directed under Class VII.

CALCAREA SULPHURICA.

Synonyms, Calcii Sulphas. Sulphate of Calcium. Sulphate of Lime.

Present Name, Calcic Sulphate.

Common Names, Gypsum. Plaster of Paris.

Formula, $\text{Ca SO}_4 \cdot 2 \text{H}_2\text{O}$.

Molecular Weight, 172.

Origin and Preparation of Sulphate of Calcium.—This compound is met with in nature in the form of transparent prisms, known as *selenite*, and in semi-opaque or opaque masses, which are called *alabaster* and *gypsum*. On adding sulphuric acid or a sulphate to a solution of a calcium salt, the same compound is precipitated, which should be well washed with distilled water, and dried on a water-bath.

Properties.—Sulphate of calcium is white, crystalline or amorphous, insoluble in alcohol, soluble in about 380 parts of cold water, and in 450 parts of boiling water; an aqueous solution, saturated at the ordinary temperature, becomes turbid on being heated to boiling. When heated to between 100° and 200° C. (212° and 392° F.), the salt becomes anhydrous.

Preparation for Homœopathic Use.—Sulphate of calcium is prepared by trituration as directed under Class VII.

CALENDULA.

Synonym, *Calendula Officinalis*, Linn.

Nat. Ord., Compositæ.

Common Name, Common Marigold.

This annual plant, originally from the south of Europe, is now cultivated in all our gardens. The root is of a pale yellow, cylindric, hairy; the stem erect, angular, hairy, branchy, from six to eighteen inches high; leaves inversely oval, or lanceolate, spatula-shaped, entire or slightly sinuous, alternate, sessile, somewhat fleshy and downy; flowers large, of a yellow-red, broad, solitary, terminal, of a disagreeable, slightly aromatic odor, and a sourish, slimy, bitter taste. In sultry weather sparks similar to electric sparks have been seen issuing from these flowers; the seeds are curved, mucicated, the inner seeds subulate, the outer boat-shaped, with a furrow on the back.

Preparation.—The fresh leaves at the top of the plant with the blossoms and buds are chopped and pounded to a pulp, and pressed out *lege artis* in a piece of new linen. The expressed juice is then, by brisk agitation, mingled with an equal part by weight of alcohol. This mixture is allowed to stand eight days in a well-stoppered bottle in a dark, cool place and then filtered.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class I.

CALTHA PALUSTRIS, *Linn.*

Synonym, *Caltha Arctica*.

Nat. Ord., Ranunculaceæ.

Common Names, Cowslip. Marsh Marigold.

This plant grows on marshes and ditch-banks in Arctic Europe, Northern and Western Asia to the Himalayas, and in North America. It is a coarse, glabrous, dark green, showy, very variable plant. Rootstock short, horizontal. Stem hollow, furrowed, eight inches to three feet long, suberect, prostrate, or procumbent and rooting from all the nodes. Leaves orbicular-reniform or deltoid-toothed. Stipules very large, membranous glairy, quite entire in bud and enclosing the young leaf, as in magnoliaceæ (Dickson). Flowers terminal, few, one to two inches in diameter, bright golden-yellow. Sepals five or more, unequal, obovate or oblong. Petals none. Carpels several, sessile; ovules numerous, in two series. Follicles numerous, many-seeded. Seeds with a prominent raphe and thickened funicle. Flowers appear from March to May.

Preparation.—The fresh plant, gathered when in flower, is chopped and pounded to a pulp, and pressed out *lege artis* in a piece of new linen. The expressed juice is then, by brisk agitation, mingled with an equal part by weight of alcohol. This mixture is allowed to stand eight days, in a well-stoppered bottle, in a dark, cool place, and then filtered.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class I.

CAMPHORA.

Synonyms, *Camphora Officinarum*, *Nees von Esenbeck*. *Laurus Camphora*, *Linn.*

Nat. Ord., Lauraceæ.

Common Name, Camphor.

The camphor-tree is an evergreen of considerable size, having the aspect of the linden, with a trunk straight below, but divided above into many branches, which are covered with a smooth, greenish bark. Its leaves, which stand alternately upon long footstalks, are ovate-lanceolate, entire, smooth and shining, ribbed, of a bright yellowish-green color on their upper surface, paler on the under, and two or three inches in length. The flowers are small, white, pediceled, and collected in clusters, which are supported by long axillary peduncles. The fruit is a red berry, resembling that of the cinnamon. The tree is a native of China, Japan, and other parts of eastern Asia. The leaves have, when bruised, the odor of camphor, which is diffused through all parts of the plant, and is obtained from the root, trunk, and branches by sublimation.

Preparation.—Two parts by weight of refined camphor gum are dissolved in nine parts by weight of alcohol, and then filtered.

Drug power of tincture, $\frac{1}{10}$.

Dilutions must be prepared as directed under Class VI—*a*.

CANCER ASTACUS.

Synonym, *Astacus Fluviatilis*.

Class, Crustacea.

Order, Decapoda.

Family, Astacidae.

Common Names, Craw-fish. Cray-fish. River-crab.

The common crab is a decapodous crustacea which inhabits, in Europe, the borders of streams, small rivers, and even lakes and ponds, where it stays in holes and under stones. Its body is oblong, generally cylindrical; the tail broad and long, covered with transverse scales, and furnished with swimming scales on the sides and at the extremity, turning in under themselves. The forepart of the body terminates in a short point jutting out between the eyes. It has ten claws, the two fore-claws terminating in strong and dentated pinchers. Any member of its body, when destroyed or mutilated, is easily regenerated. The crabs change their calcareous coat every year, and at that time two hard, calcareous bodies, called crab's eyes, are found in their stomachs. These are intended to furnish the proper material towards the reproduction of the new coat. The female carries under her reverted tail, first her eggs, then her young, until they attain a certain size.

Preparation.—The live crab is mashed, in a stone-mortar, to a fine paste, and covered with twice its weight of alcohol. After having been poured into a well-stoppered bottle, it is allowed to remain eight days in a dark, cool place, being shaken twice a day. The tincture is then poured off and filtered.

Drug powder of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class I.

CANCHALAGUA.

Synonyms, *Erythraea Chilensis*, *Persoon*.

Nat. Ord., Gentianaceæ.

Common Name, Centaury of Chili.

This plant is found growing in California, and in some parts of South America. It is a small, grass-like plant, with lance-shaped leaves, and small, red blossoms, resembling in shape those of the forget-me-not.

Preparation.—The whole plant, in flower, is carefully dried, and finely powdered, and covered with five parts by weight of alcohol. Having poured this into a well-stoppered bottle, it is allowed to remain eight days, in a dark, cool place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Amount of drug power, $\frac{1}{10}$.

Dilutions must be prepared as directed under Class IV.

CANNABIS.

Synonym, *Cannabis Sativa*, *Linn.*

Nat. Ord., Urticaceæ.

Common Names, Hemp. Gallow Grass.

Hemp is an annual plant, from four to eight feet or more in height, with an erect, branching angular stem. The leaves are alternate or opposite, on long, lax footstalks, roughish, and digitate with linear-lanceolate, serrated segments. The stipules are subulate. The flowers are axillary; the male in long, branched, drooping racemes; the female in erect simple spikes. The stamens are five, with long pendulous anthers; the pistils two, with long, filiform, glandular stigmas. The fruit is ovate and one-seeded. The whole plant is covered with a fine pubescence, scarcely visible to the naked eye, and is somewhat viscid to the touch. The hemp plant of India has been considered by some as a distinct species, and named *Cannabis Indica*; but the most observant botanists, upon comparing it with our cultivated plant, have been unable to discover any specific difference. It is now, therefore, regarded merely as a variety, and is distinguished by the epithet *Indica*. *Cannabis Sativa* is a native of the Caucasus, Persia, and the hilly regions in the north of India. It is cultivated in many parts of Europe and Asia, and largely in our Western States.

Preparation.—The fresh blooming herb-tops, of the male and female herb, are chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, and having poured it into a well-stoppered bottle, it is allowed to stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{4}$.

Dilutions must be prepared as directed under Class III.

CANNABIS INDICA.

Synonym, *Cannabis Sativa*, *Linn.*, var. *Indica*.

Nat. Ord., Urticaceæ.

Common Names, Bhang. Ganja. Hashish. Indian Hemp.

The hemp plant is indigenous to Asia, from India North to Western China and the Caspian Sea; it grows likewise in tropical Africa, has been naturalized in some parts of Brazil, and is cultivated in many parts of the world. It is an annual, with an angular roundish stem, four to eight and even ten feet high, with opposite or alternate petiolate and digitate leaves, composed of five to nine lanceolate, acute, and serrate leaflets, and with diœcious flowers. The Indian plant has the lower leaves alternate, the stem is more branched and the bast fibres are coarser; but the characters vary and are not sufficiently important to constitute it a distinct species.

Preparation.—The dried herb-tops are bruised, covered with five parts by weight of alcohol, and allowed to remain eight days, in a well-stoppered bottle, in a dark, cool place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{10}$.

Dilutions must be prepared as directed under Class IV.

CANNA GLAUCA, *Linn.*

Synonym, *Canna Angustifolia, Mure.*

Nat. Ord., Canniaceæ.

Common Name (Brazilian), Imbiri.

This plant is a native of the West Indies, and inhabits damp regions, or the borders of brooks. Its stem is erect, cylindrical, growing to a height of about six feet out of a rhizome sending off numerous rootlets. It is provided with knots, whence arise large alternate clasping leaves, whose lanceolate limbs have strong midribs, sending off fine parallel transverse nerves. At its summit the stem produces the flower-bearing pedicles. Flowers alternate, on short peduncles, and accompanied by bracts. The corolla has a double perianth, with three divisions adhering to the triangular, greenish and glandular ovary; the stamens present the changing characters so common in this family.

Preparation.—The fresh leaves are chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one sixth part of it, the rest of the alcohol is added. After having stirred the whole well, and having poured it into a well-stoppered bottle, it is allowed to stand eight days, in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{6}$.

Dilutions must be prepared as directed under Class III.

CANTHARIS.

Synonyms, *Cantharis Vesicatoria, De Geer.* *Lytta Vesicatoria, Fabricius.* *Melão Vesicatorius, Linn.*

Class, Insecta.

Order, Coleoptera.

Family, Vesicantia.

Common Name, Spanish Fly.

This fly of the middle and south of Europe appears in the months of May and June, especially on the white poplar, privet, ash, elder and lilac, etc., upon the leaves of which they feed. The insect is about half an inch long, of a golden yellow-green; head inclined, almost cordiform; antennæ filiform, of twelve joints, black; antennulæ equally filiform, the posterior swollen at the extremity; eyes large, of a deep brown; mouth with an upper lip and two bifid jaws; body elongated, almost round and cylindric; two wings; elytræ soft, demi-cylindric, marked with longitudinal streaks; head and feet full of whitish hairs; the odor is sweetish, nauseous; taste very acrid, almost caustic. The larvæ of these insects have a yellowish-white body, formed of three rings, six short feet, rounded head, two short filiform antennæ, two jaws and four feelers; they live in the ground, feed on roots, there undergo their metamorphosis, and do not come out till they are perfect

insects. In May and June when the insects swarm upon the trees, they are collected in the mornings at sunrise, when they are torpid from the cold of the night, and easily let go their hold. Persons with their faces protected by masks and their hands with gloves, shake the trees or beat them with poles; and the insects are received as they fall upon linen cloths spread underneath. They are then exposed in sieves to the vapor of boiling vinegar, and, having been thus deprived of life, are dried either in the sun or in apartments heated by stoves. The larger flies are much better for medical use than the smaller ones.

Preparation.—Select perfect insects (large ones) that are not worm-eaten, and pulverize them to a fine powder and weigh. Then pour over it five parts by weight of alcohol, and having put it into a well-stoppered bottle, let it remain eight days in a dark, cool place, shaking twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{15}$.

Dilutions must be prepared as directed under Class IV.

Triturations are prepared from the powdered insect, as directed under Class VII.

CAPSICUM.

Synonym, *Capsicum Annuum, Linn.*

Nat. Ord., Solanaceæ.

Common Names, Cayenne Pepper. Red Pepper.

The stem of the annual capsicum is thick, roundish, smooth, and branching; rises two or three feet in height, and supports ovate, pointed, smooth, entire leaves, which are placed without regular order on long footstalks. The flowers are solitary, white, and stand on long peduncles at the axils of the leaves. The calyx is persistent, tubular, and five-cleft; the corolla, monopetalous and wheel-shaped, with the limb divided into five spreading, pointed and plaited segments; the filaments short, tapering and furnished with oblong anthers; the germen, ovate, supporting a slender style which is longer than the filaments, and terminates in a blunt stigma. The fruit is a pendulous, pod-like berry, light, smooth and shining, of a bright scarlet, orange, or sometimes yellow color, with two or three cells, containing a dry, loose pulp, and numerous flat, kidney-shaped, whitish seeds. The flowers appear in July and August, and the fruit ripens in October. The medicinal variety is that with long, conical, generally pointed, recurved fruit, usually not thicker than the finger. The plant is a native of the warmer regions of Asia and America, and is cultivated in almost all parts of the world.

Preparation.—The ripe, dried fruit, that has not been worm-eaten, is pulverized finely and covered with five parts by weight of alcohol and allowed to remain eight days in a well-stoppered bottle in a dark, cool place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{15}$.

Dilutions must be prepared as directed under Class IV.

CARBO ANIMALIS.

Synonyms, Animal Charcoal. Leather Charcoal.

Preparation of Animal Charcoal.—The preparation used by Hahnemann in his provings, and which ought, therefore, to be preferred to all others, was made as follows: Place a thick piece of ox-hide leather (neat's leather) on red-hot coals, where it must remain as long as it burns with a flame. As soon, however, as the flame ceases, lift off the red-hot mass, and extinguish it by pressing between two flat stones, and preserve it in well-stoppered bottles. If allowed to cool gradually in the air most of the carbon would be consumed.

Preparation for Homœopathic Use.—The animal charcoal procured as described above, is prepared by trituration as directed under Class VII.

CARBONEUM.

Common Name, Lampblack.

Preparation.—Carboneum is an amorphous carbon, produced by the imperfect combustion of oils or resins. That used for provings was obtained from the chimney of a coal-oil lamp; to obtain which, it is only necessary that the wick be turned up high while burning, causing imperfect combustion, when the lampblack is deposited upon the sides of the chimney.

Preparation for Homœopathic Use.—Lampblack, obtained as described above, is prepared by trituration, as directed under Class VII.

CARBONEUM CHLORATUM.

Synonyms, Carbonei Tetrachloridum. Chlorocarbon. Tetrachloride of Carbon.

Formula, CCl_4 .

Molecular Weight, 154.

Preparation of Chlorocarbon.—Chlorocarbon was discovered by Regnault in 1839, and is produced by the action of chlorine upon marsh gas, CH_4 , or upon chloroform, CHCl_3 , hydrochloric acid being also formed in both cases. It is best prepared by passing well-dried chlorine gas through bisulphide of carbon, and afterwards through a porcelain tube wrapped in sheet copper, and filled with fragments of porcelain maintained at a red heat, whereby tetrachloride of carbon and chloride of sulphur are produced; $\text{CS}_2 + 3\text{Cl}_2$ yields $\text{CCl}_4 + \text{S}_2\text{Cl}_2$. The vapors are condensed by the aid of ice or a refrigerating mixture, and the liquid thus obtained is slowly added to an excess of potassa solution or milk of lime, whereby the chloride of sulphur is decomposed and dissolved. The chlorocarbon separates at the bottom, and is purified by distillation.

Properties.—It is a colorless, thin, oily liquid of an agreeable aromatic odor, insoluble in water, soluble in alcohol and ether, and not decomposed by contact with aqueous solution of potassa, which, however, will remove any bisulphide of carbon that may be present.

Chlorocarbon has the spec. grav. 1.599, and boils at 78° C. (172.4° F.). Geuther (1858) observed that by the action of nascent hydrogen, it is gradually converted into hydrochloric acid and chloroform or methylene chloride, $\text{CH}_2 \text{Cl}_2$, according to the temperature at which the reaction takes place.

It may be regarded as a chlorinated derivative of marsh gas; according to its elementary composition it is a tetrachloride of carbon, or, according to the old notation, a *bichloride of carbon*, CCl_2 or $\text{C}_2 \text{Cl}_4$, which name is still occasionally used.

Preparation for Homœopathic Use.—One part by weight is dissolved in fifty part by weight of alcohol.

Amount of drug power, $\frac{1}{100}$.

Dilutions must be prepared as directed under Class VI— β .

CARBONEUM HYDROGENISATUM.

Synonyms, Carburetted Hydrogen. Ethene.

Common Name, Olefiant Gas.

Formula, $\text{C}_2 \text{H}_4$.

The chief illuminating constituent of coal-gas.

Preparation of Ethene or Olefiant Gas.—Strong spirits of wine is mixed with five or six times its weight of oil of vitrol in a glass flask, the tube of which passes into a wash-bottle containing caustic potash. A second wash-bottle, partly filled with oil of vitrol, is connected with the first, and furnished with a tube dipping into the water of the pneumatic trough. On the first application of heat to the contents of the flask, alcohol, and afterwards ether, make their appearance; but, as the temperature rises, and the mixture blackens, the ether-vapor diminishes in quantity, and its place becomes in great part supplied by a permanent inflammable gas; carbon dioxide and sulphurous oxide are also generated at the same time, besides traces of other products. The two last-mentioned gases are absorbed by the alkali in the first bottle, and the ether-vapor by the acid in the second, so that the olefiant gas is delivered tolerably pure.

Properties and Tests.—Olefiant gas thus produced is colorless, neutral, and but slightly soluble in water. Alcohol, ether, oil of turpentine, and even olive oil, as Faraday has observed, dissolve it to a considerable extent. It has a faint odor of garlic. On the approach of a kindled taper it takes fire, and burns with a splendid white light, far surpassing in brilliancy that produced by marsh gas. This gas, when mixed with oxygen, and fired, explodes with extreme violence. Its density is 0.981; a litre weighs 1.25194 grams; 100 cubic inches weigh 30.57 grains.

Ethene is decomposed by passing it through a tube heated to bright redness; a deposit of charcoal and tar takes place and the gas becomes converted into marsh gas, or even into free hydrogen, if the temperature be very high. This latter change is, of course, attended by increase of volume. Chlorine acts upon ethene in a very remarkable manner. When the two bodies are mixed, even in the dark, they combine in equal measures, and give rise to a heavy oily liquid, of sweetish

taste and ethereal odor, to which the name of *ethene chloride*, or *Dutch liquid* (formula $C_2H_4Cl_2$), is given. It is from this peculiarity that the term *olefiant gas* is derived.

A pleasing and instructive experiment may also be made by mixing in a tall jar two measures of chlorine and one of ethene, and then quickly applying a light to the mouth of the vessel. The chlorine and hydrogen unite with flame, which passes quickly down the jar, while the whole of the carbon is set free in the form of a thick black smoke.

Preparation for Homœopathic Use.—A saturated solution in alcohol is made of the gas obtained as directed above, which will correspond to about the 1x dilution.

Dilutions must be prepared as directed under Class VI—*a*.

CARBONEUM OXYGENISATUM.

Synonyms, Carbon Monoxide. Carbonous Oxide.

Common Name, Carbonic Oxide.

Formula, CO.

Preparation of Carbonous Oxide.—The preferable method of preparing this gas is to heat finely powdered yellow potassium ferrocyanide with eight or ten times its weight of concentrated sulphuric acid. The salt is entirely decomposed, yielding a most copious supply of perfectly pure carbonous oxide gas, which may be collected over water in the usual manner.

Properties and Tests.—Carbonous oxide is a combustible gas; it burns with a beautiful pale blue flame, generating carbon dioxide. It has never been liquefied. It is colorless, has very little odor, and is extremely poisonous. Mixed with oxygen, it explodes by the electric spark, but with some difficulty. Its specific gravity is 0.973; a litre weighs 1.2515 grams; 100 cubic inches weigh 30.21 grains. Carbon monoxide unites with chlorine under the influence of light, forming a pungent, suffocating compound, possessing acid properties, called *phosgene gas*, or *carbonyl chloride*.

Preparation for Homœopathic Use.—Distilled water is saturated with carbonous oxide, and then diluted with an equal part by weight of distilled water.

Amount of drug power, $\frac{1}{100}$.

Dilutions must be prepared as directed under Class V—*β*.

CARBONEUM SULPHURATUM.

Synonyms, Alcohol Sulphuris Lampadii. Bisulphide of Carbon. Carbonei Bisulphidum. Carbonic Sulphide.

Common Name, Sulphuret of Carbon.

Formula, CS_2 .

Molecular Weight, 76.

Preparation of Bisulphide of Carbon.—Bisulphide or bisulphuret of carbon is made on a large scale by heating fragments of charcoal or coke to redness and occasionally dropping through a tube, to the bottom of the retort, pieces of sulphur, which is vaporized and unites with the red-hot charcoal. The condensed liquid is freed from

the compounds having a disagreeable odor, by prolonged agitation with milk of lime, litharge, certain metals, or powdered corrosive sublimate, decanting, adding about two per cent. of a bland oil, and rectifying in a water-bath.

Properties.—Thus obtained it is a very mobile colorless liquid having a high refracting power, and when quite pure, an agreeable ethereal odor, but often it is of a more or less fetid odor from the presence of other volatile compounds. It has the specific gravity 1.269 at 15° C. (59° F.), boils at 47.7° C. (117.8° F.), evaporates rapidly at the ordinary temperature, and on passing a rapid current of dry air over its surface, partly congeals. It is very inflammable, has a burning aromatic taste, is nearly insoluble in water, soluble in alcohol, dissolves freely phosphorus, sulphur, bromine, iodine, fats, volatile oils, caoutchouc and other compounds. Bisulphide of carbon should be kept in a well-stoppered bottle and in a cool place. Its vapor is very poisonous. When set on fire in the air, it burns with a blue flame, forming carbon dioxide and sulphur dioxide gases; and when its vapor is mixed with oxygen, it becomes explosive.

Preparation for Homœopathic Use.—One part by weight of pure bisulphide of carbon is dissolved in fifty parts by weight of ninety-five per cent. alcohol.

Amount of drug power, $\frac{1}{100}$.

Dilutions must be prepared as directed under Class VI— β , except that ninety-five per cent. alcohol is used.

CARBO VEGETABILIS.

Common Names, Vegetable Charcoal. Wood Charcoal.

Preparation of Vegetable Charcoal on a large scale.—Billets of wood are piled in a conical form, and covered with earth and sod to prevent the free access of air; several holes being left at the bottom, and one at the top of the pile, in order to produce a draught to commence the combustion. The wood is then kindled from the bottom. In a little while the hole at the top is closed, and, after the ignition is found to have pervaded the whole pile, those at the bottom are stopped also. The combustion taking place with a smothered flame, the volatile portions of the wood, consisting of hydrogen and oxygen, are dissipated; while the carbon, in the form of charcoal, is left.

Preparation for Homœopathic Use.—We select the firmest piece of beech, or birch charcoal, of medium thickness, divested of the bark, clearly showing the texture of the wood, and allowing us to infer, from a certain bright lustre, that the carbonizing process was perfect. These pieces, after being divided into lumps of the size of a fist are again made red-hot, and then speedily extinguished in an earthen vessel provided with a well-fitting cover; having been allowed to cool, and the ashes which may have formed having been blown off, the pieces are pulverized very finely, and the powder is kept in well-stoppered bottles in a dry place.

This powder is prepared by trituration, as directed under Class VII.

CARDUUS BENEDICTUS.

Synonyms, *Centaurea Benedicta*, *Linn.* *Cnicus Benedictus*, *Gærtner*.

Nat. Ord., *Compositæ*.

Common Names, Blessed Thistle. Star Thistle.

This is an annual herbaceous plant, the stem of which is about two feet high, branching towards the top, and furnished with long, elliptical, rough leaves, irregularly toothed, barbed with sharp points at their edges, of a bright green color on their upper surface, and whitish on the under. The lower leaves are deeply sinuated, and stand on foot-stalks; the upper are sessile, and in some measure decurrent. The flowers are yellow and surrounded by an involucre of ten leaves, of which the five exterior are largest. The calyx is oval, wooly and composed of several imbricated scales, terminated by rigid, pinnate, spinous points. The plant is a native of the south of Europe, and is cultivated in gardens in other parts of the world. It has become naturalized in the United States. The herb has a feeble, unpleasant odor, and an intensely bitter taste. Its flowers appear in June.

Preparation.—The fresh herb, gathered when the plant is in flower, is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, and having poured it into a well-stoppered bottle, it is allowed to stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{4}$.

Dilutions must be prepared as directed under Class III.

CARDUUS MARIANUS, Linn.

Synonyms, *Cnicus Marianus*. *Silybum Marianum*.

Nat. Ord., *Compositæ*.

Common Names, Milk Thistle. St Mary's Thistle.

This is an annual or biennial, two or three feet high, not much branched and glabrous, or with but very little cottony wool. Leaves are smooth and shining above, and variegated by white veins; the lower ones deeply pinnatifid, with broad, very prickly lobes; the upper ones clasping the stem by prickly auricles, but scarcely decurrent. Flower-heads large, drooping, solitary at the ends of the branches, with purple florets. Bracts of the involucre very broad at the base, with a stiff, spreading, leafy appendage, ending in a long prickle, and bordered with prickles at its base. Hairs of the pappus simple. The plant is a native of Southern Europe.

Preparation.—Take one part by weight of the ripe, whole seed, and cover with two parts by weight of dilute alcohol, letting it remain eight days in a well-stoppered bottle, in a dark, cool place, and shaking it twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{3}$.

Dilutions must be prepared as follows: the 1x with 30 drops of tincture to 70 drops of dilute alcohol; the 2x and 3x also with dilute alcohol. The 1 dilution with 3 drops of tincture to 97 drops of dilute alcohol, the 2 with dilute alcohol; for higher potencies alcohol is used.

CARYA ALBA, Nuttall.

Nat. Ord., Juglandaceæ.

Common Names, Shag-Bark. Shellbark. Hickory Nut.

This large and handsome tree, furnishing most valuable wood and the principal hickory nuts of the market, is indigenous to North America. Bark of trunk shaggy, exfoliating in rough strips or plates; inner bud-scales becoming large and conspicuous, persistent till the flowers are fully developed; leaflets five, when young minutely downy beneath, finely serrate, the three upper obovate-lanceolate, the lower pair much smaller and oblong-lanceolate, all taper-pointed; fruit globular or depressed; nut white, flatish-globular, barely mucronate, the shell thinnish and splitting promptly into four, when dry, hard or woody valves. Nuts ripen and fall in October.

Preparation.—The ripe nuts are finely powdered, and covered with five parts by weight of alcohol. Having been poured into a well-stoppered bottle, it is allowed to remain eight days in a dark, cool place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Amount of drug power, $\frac{1}{16}$.

Dilutions must be prepared as directed under Class IV.

CASCARILLA.

Synonyms, *Clusia Eluteria*, Linn. *Croton Eleutheria*, Bennett.

Nat. Ord., Euphorbiaceæ.

Common Name, Cascarilla.

This, though commonly a shrub of from three to five feet high, sometimes appears in the form of a small tree with a stem from four to eight inches in diameter. The stem is straight, and marked at intervals with white or grayish stains. The leaves are petiolate, from two to three inches in length by an inch or more in breadth, often somewhat cordate at the base, obtusely acuminate, pale or grayish-green above, and densely covered beneath with shining, silvery scales, appearing white at a distance. They are smaller and narrower in the plants of arborescent growth. The flowers, which have a delicious odor, are monœcious, small, white, petiolate, and closely set in simple terminal or axillary spikes. The shrub is a native of the Bahamas, scarce at present in the island of New Providence, but still abundant in Andros, Long and Eleutheria islands, from the latter of which it derived its botanical title. Cascarilla bark has an aromatic odor, rendered much more distinct by friction, and a warm, spicy, bitter taste. When burnt it emits a pleasant odor, closely resembling that of musk, but weaker and more agreeable.

Preparation.—The dried bark, finely powdered, is covered with

five parts by weight of alcohol, and allowed to remain eight days in a well-stoppered bottle, in a dark, cool place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{16}$.

Dilutions must be prepared as directed under Class IV.

CASTANEA.

Synonyms, *Castanea Edulis*, *Gartner*. *Castanea Vesca*, *Linn*.

Nat. Ord., Cupuliferae.

Common Name, Chestnut.

The American chestnut is, under favorable circumstances, one of our largest and most magnificent native trees. Its leaves are its most characteristic feature, and serve at once to distinguish it. They are from four to eight inches long by about two in breadth, oblong-elliptical, sharp at the end, strongly and somewhat unequally serrated, with prominent parallel nerves beneath, of a brilliant color and firm consistence. The male flowers are whitish, and disposed on axillary peduncles four or five inches long; the fertile aments similarly disposed, but less conspicuous. The fruit is a spherical burr, an inch or two in diameter and very prickly, containing two or three brown nuts, the appearance of which is too well known to require description here. When perfectly ripe it opens and lets fall the seeds, remaining longer attached to the stem.

The American chestnut is spread largely through the eastern portions of the United States, from New Hampshire to the mountainous districts of Virginia, North and South Carolina, Georgia and Tennessee, where it abounds; as also in the Middle States of New Jersey and Pennsylvania.

Preparation.—The fresh leaves are chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and after thoroughly mixing the pulp with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well and having poured it into a well-stoppered bottle, it is allowed to stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{4}$.

Dilutions must be prepared as directed under Class III.

CASTOR EQUORUM.

Synonyms, *Castor Equi*. *Verrucæ Equorum*.

Class, Mammalia.

Order, Equidæ.

Family, *Equus Caballus*.

This is the blackish excrescence, found on the inner side of the fore and hind legs of the horse, above the knee and below the hock joints, which readily exfoliates, and on rubbing emits a peculiar odor.

Preparation.—The substance is dried, pulverized and prepared by trituration, as directed under Class VII.

CASTOREUM.

Synonyms, Castoreum Sibiricum. Castor Fiber, *Linn.*

Class, Mammalia.

Order, Palmipedia.

Family, Glres.

Common Names, Beaver's cod. Castor.

In the beaver, the *Castor fiber* of naturalists, between the anus and external genitals of both sexes, are two pairs of membranous follicles, which are pear-shaped, and contain an oily, viscid, highly odorous substance, secreted by glands which lie externally to the sac. This substance is called castor. The upper pair are the real castor sacs, the lower containing an oily secretion, with very little dark colored castor. After the death of the animal the follicles are removed and dried, either by smoke or in the sun; and in this state are brought into the market. Castor comes to us in the form of solid unctuous masses, contained in sacs about two inches in length, larger at one end than at the other, much flattened and wrinkled, of a brown or blackish color externally, and united in pairs by the excretory ducts which connect them in the living animal. In each pair one sac is generally larger than the other. They are divided internally into numerous cells, containing the castor which, when the sacs are cut or torn open, is exhibited of a brown or reddish-brown color, intermingled more or less with the whitish membrane forming the cells. Good castor has a strong, fetid, peculiar odor; a bitter, acrid and nauseous taste. It is of a softer or harder consistence, according as it is more or less thoroughly dried. When perfectly desiccated, though still somewhat unctuous, it is hard, brittle, and has a resinous fracture.

Preparation.—The dry substance is prepared by trituration, as directed under Class VII, which is the preferable method in homœopathic practice, but "tincture" may be prepared by the dry substance being covered with five parts by weight of alcohol, and allowed to remain eight days in a well-stoppered bottle in a dark, cool place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{16}$.

Dilutions, from tincture, must be prepared as directed under Class IV.

CAULOPHYLLUM.

Synonyms, Caulophyllum Thalictroides, *Micheaux.* Leontice Thalictroides, *Linn.*

Nat. Ord., Berberidacæ.

Common Names, Blue Cohosh. Pappoose Root. Squaw Root.

This is an indigenous, perennial, herbaceous plant, with matted, knotty rhizomas, from which rises a single, smooth stem about two feet high, naked till near the summit, where it sends out a large triternately compound leaf, ending in a small panicle of greenish-yellow flowers, at the base of which is often a smaller biternate leaf. The whole plant when young, as well as the seeds, which are about as large as peas, is

glaucous. It is the only known species of the genus. It is found in most parts of the United States, growing in moist rich woods. The root has a sweetish, pungent taste. Flowers appear in April and May.

Preparation.—The fresh root, gathered early in the season when growth begins, is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and after thoroughly mixing the pulp with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well and having poured it into a well-stoppered bottle, it is allowed to stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

CAUSTICUM.

Synonym, Causticum Hahnemanni.

This is a preparation peculiar to homœopathy, and hence must be prepared exactly according to Hahnemann's directions.

Preparation of Causticum.—A piece of freshly burnt lime is put for one minute in distilled water, then placed in a dry vessel, where it crumbles to powder. Mix four parts of this powder with the same quantity of the bisulphate of potash (which is previously ignited and melted and, after cooling, pulverized) dissolved in four parts of boiling water, in a heated porcelain mortar, and after stirring it to a stiff paste, put the mixture into a glass retort, the helm of which is connected with a receiver half immersed in cold water. Increase the heat gradually and distil to dryness. The clear distilled liquid amounting to about three parts by weight, mix with an equal weight of strong alcohol.

Amount of drug power, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class I.

CEANOTHUS AMERICANUS, Linn.

Synonyms, Ceanothus Herbaceous. Ceanothus Sanguinis.

Nat. Ord., Rhamnaceæ.

Common Names, New Jersey Tea. Red Root.

This is an indigenous shrubby plant, stems growing from one to three feet high, from a dark red root; branches downy; leaves ovate or oblong-ovate, three-ribbed, serrate, downy beneath, often heart-shaped at the base; common peduncles elongated; flowers in pretty white clusters at the summit of naked flower branches appear in July. The plant is found throughout the United States, growing in dry woodlands, barrens, etc. The leaves have been substituted for tea, to which they have a strong resemblance when dried, both in taste and odor.

Preparation.—The fresh leaves are chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, and having poured it into a well-stoppered bottle, it is allowed to stand eight days

in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

CEDRON.

Synonym, Simaba Cedron, *Planchon*.

Nat. Ord., Simarubaceæ.

Common Name, Cedron.

This is a small tree, with an erect stem, not exceeding six inches in diameter, branching at top in an umbellate form, with large, glabrous, pinnate leaves, and pale brown flowers, in long, branching racemes. The fruit is a large, solitary drupe, containing a single seed. The fruit is light, of a yellowish ash color, flattish-ovate, with one edge convex and the other nearly straight, the convex outline terminating at each end in an obtuse point, of which that at the apex is most prominent. It is about two inches long, and sixteen lines in its greatest breadth. Within, the seed is loose and movable. The seed itself is about an inch and a half long, ten lines broad, and half an inch thick. It is convex on one side, flat or slightly concave on the other, and presents an oval scar near one extremity of the flat surface. It is hard and compact, but may be readily cut with a knife. The seed is inodorous, but of a pure and intensely bitter taste, not unlike that of quassia. The tree is a native of New Granada and Central America.

Preparation.—The dried, powdered seed is covered with five parts by weight of alcohol, and allowed to remain eight days, in a well-stoppered bottle, in a dark, cool place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{10}$.

Dilutions must be prepared as directed under Class IV.

CEPA.

Synonym, Allium Cepa, *Linn.*

Nat. Ord., Liliaceæ.

Common Name, Onion.

This is a perennial bulbous plant, with a naked scape, swelling towards the base, exceeding the leaves in length, and terminating in a simple umbel of white flowers. The leaves are hollow, cylindrical, and pointed. The original country of the onion is unknown. The plant has been cultivated from time immemorial, and is now diffused over the whole civilized world.

Preparation.—The fresh, red, somewhat long bulb, is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one sixth part of it, the rest of the alcohol is added. After having stirred the whole well, and having poured it into a well-stoppered bottle, it is allowed to stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{8}$.

Dilutions must be prepared as directed under Class III.

CEPHALANTHUS OCCIDENTALIS, *Linn.*

Nat. Ord., Rubiaceæ.

Common Names, Button Bush. Crane Willow.

This is a common, indigenous shrub, which received both its generic title and common name from the arrangement of its flowers in dense spherical heads. It prefers moist places, as along streams, or on the borders of swamps. Stems are smooth or pubescent. Leaves petioled, ovate, or lanceolate-oblong, pointed, opposite or whorled in threes, with short intervening stipules. Flowers white, densely aggregated in spherical peduncled heads. Calyx-tube inversely pyramidal, the limb four-toothed. Corolla tubular, four-toothed; the teeth imbricated in the bud. Style thread-form, much protruded. Stigma capitate. Fruit dry and hard, small, inversely pyramidal, two to four-celled, at length splitting from the base upward into the two to four closed one-seeded portions. The flowers appear in July and August.

Preparation.—The fresh bark is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, and having poured it into a well-stoppered bottle, it is allowed to stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Amount of drug power, $\frac{1}{8}$.

Dilutions must be prepared as directed under Class III.

CERASUS VIRGINIANA, *Michaux.*

Synonym, *Prunus Virginiana*.

Nat. Ord., Amygdaleæ.

Common Names, Black Cherry. Wild Cherry.

The wild cherry is a large, North American forest tree, growing to the height of sixty or eighty feet, with the trunk undivided to the height of twenty or thirty feet. When grown in the open field, it is usually much smaller. It has alternate lance-oblong, taper-pointed, petiolate leaves, which are three to five inches long, and are finely serrate with incurved teeth. The flowers are white and in elongated racemes, about four or five inches long, and terminal on the branchlets. The fruit is a small, globose, purplish-black drupe of a sweet and bitterish taste. Wild-cherry bark, as kept in the shops, is in pieces of various sizes, more or less curved laterally, usually destitute of epidermis, of a lively reddish-cinnamon color, brittle and pulverizable, presenting a reddish-gray fracture, and affording a fawn-colored powder. In the fresh state, or when treated with water, it emits an odor resembling that of peach leaves. Its taste is agreeably bitter and aromatic, with the peculiar flavor of the bitter almond.

Preparation.—The freshly dried bark, finely powdered, is covered

with five parts by weight of alcohol, and allowed to remain eight days in a well-stoppered bottle, in a dark, cool place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{10}$.

Dilutions must be prepared as directed under Class IV.

CEREUS BONPLANDII.

Nat. Ord., Cactaceæ.

A variety of *Cereus Grandiflorus*.

Preparation.—The stems are chopped and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, and having poured it into a well-stoppered bottle, it is allowed to stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{3}$.

Dilutions must be prepared as directed under Class III.

CERIUM OXALICUM.

Synonym, *Cerii Oxalas*.

Common Name, Oxalate of Cerium.

Formula, $\text{Ce C}_2\text{O}_4 \cdot 3\text{H}_2\text{O}$.

Molecular Weight, 234.

Preparation of Oxalate of Cerium.—The powdered mineral (cerium) is heated with concentrated sulphuric acid, to decompose the silicates, the dry mass ignited, then dissolved in dilute nitric acid, and treated with sulphuretted hydrogen to remove copper, etc. A little hydrochloric acid is added to prevent the precipitation of calcium salt, and the cerite metals precipitated as oxalates by oxalic acid. The precipitate is mixed with carbonate of magnesium, the mixture calcined to decompose the oxalates, the residue dissolved in a small portion of concentrated nitric acid, and the solution thrown into a large quantity of water containing about one-half per cent. of sulphuric acid. Lanthanum and didymium remain in solution, together with the magnesium and a little cerium, most of which is precipitated as yellow *ceric* sulphate; the latter is dissolved in sulphuric acid, and reduced to cerous sulphate by sodium hyposulphite, when the oxalate may be precipitated by oxalic acid.

Properties and Tests.—Oxalate of cerium is a white granular powder, insoluble in the simple solvents, but soluble in sulphuric and hydrochloric acids without effervescence (absence of carbonates), and this solution is not precipitated by sulphuretted hydrogen (absence of heavy metals). When calcined in contact with the air, the salt yields yellow ceric oxide, which has a brown tint if didymous oxide is present. Cerium oxalate dissolves in boiling potassa solution, and the clear liquid is not precipitated when heated with excess of ammonium chloride (absence of aluminium compounds); and when acidulated with acetic acid remains clear, but yields with calcium chloride a white precipitate of calcium oxalate.

Preparation for Homœopathic Use.—The pure oxalate of cerium is prepared by trituration, as directed under Class VII.

CERVUS BRAZILICUS, *Nobis*.

Synonym, Cervus Campestris.

Class, Mammalia.

Order, Artiodactyla.

Family, Cervina.

Common Names, Brazilian Stag. Guazouti.

This stag, whose form is extremely fine and graceful, inhabits the forests of Brazil. Its size is about the same as that of our stag. Its skin, the color of which never changes, is of a brownish-fallow, being rather lighter towards the abdomen, the posterior part of the thighs and the tail. The inferior surface of the lower jaw, the part above and below the eyes, the interior of the ears and the abdomen are white; a black line encircles the jaws and gradually disappears under the lower one. The eyes of the guazouti are black, it has no canine teeth; its mouth, which is very slender, tapers to a muzzle. The horns which, in every case, are not very high and extremely regular, are at first straight; they curve forward in the second year, send forth three antlers, the anterior being placed about two inches above the burr, which is turned a little inward, and the other two at the superior and posterior part of the staff. The horns become larger as they grow older, but the number of antlers remains the same.

Preparation.—A small piece of the fresh hide with the hair on, is triturated, according to Class IX.

CHAMOMILLA.

Synonyms, Chamomilla Vulgaris. Matricaria Chamomilla, *Linn*.

Nat. Ord., Compositæ.

Common Names, Common Chamomile. Corn Fever-Few. German Chamomile.

This annual plant grows in uncultivated fields, among wheat and corn, especially in sandy regions, all over Europe.

From the fibrous root shoot up several stems, erect, striated, ramose, naked, from one to two feet long; the leaves are sparse, the lower double, the upper single, pinnated and dark green; the flowers are numerous, white, with yellow disk, and in corymbs; calyx hemispherical, imbricated, scariose; the receptacle naked and conical; the stems are swollen at the top, the covering scales tiled, blunt, great, skinny at the margin, whitish or brownish.

The common chamomile is frequently confounded with the Roman chamomile, from which it is distinguished by its perennial stalk, its chaffy receptacle, its hollow peduncles, the green scales of the calyx, and by its rays being mostly turned in.

Preparation.—The whole fresh plant, when in flower, is chopped and pounded to a fine pulp, and pressed out *lege artis* in a piece of new linen. The expressed juice is then, by brisk agitation, mingled with

an equal part by weight of alcohol. This mixture is allowed to stand eight days in a well-stoppered bottle, in a dark, cool place, and then filtered.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class I.

CHELIDONIUM.

Synonyms, *Chelidonium Majus*, *Linn.* *Papaver Corniculatum Luteum*.

Nat. Ord., Papaveraceæ.

Common Names, Celandine. Tetter-Wort.

This perennial plant grows all over Germany, as well as in France, in waste places, old walls, hedges, borders of highways, near habitations, etc.; the root is fusiform, of the thickness of a finger, of a reddish-brown without, yellowish within, containing, as well as all parts of the plant, an acrid, yellow juice; stem ramose, hairy, one to two feet high; leaves thin, winged, pinnatifid, bluish-green beneath, clear green above; flowers yellow, axillary, or terminal; peduncles in umbels; umbel simple, of four or five rays; calyx caduceous and two-leaved; corolla of four petals; petals ligulate, threads united with the anthers, imitating petals; silique polyspermous, unilocular, linear, thin.

Preparation.—The fresh root is chopped and pounded to a pulp and pressed out *lege artis* in a piece of new linen. The expressed juice is then, by brisk agitation, mingled with an equal part by weight of alcohol. This mixture is allowed to stand eight days in a dark, cool place, and then filtered.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class I.

CHELONE.

Synonyms, *Chelone Alba*. *Chelone Glabra*, *Linn.*

Nat. Ord., Scrophulariaceæ.

Common Names, Balmony. Snake-Head. Turtle-Head.

This is a common perennial herbaceous plant, found in wet situations throughout the United States. Its smooth, upright branching stem rises to a foot or two in height. Leaves, very short petioled, lanceolate or lance-oblong, pointed, variable in width. Flowers are large, white, rose-colored or purple, which are nearly sessile in spikes or clusters, and closely imbricated with round ovate concave bracts and bractlets. Calyx of five distinct imbricated sepals. Corolla inflated, tubular, with the mouth a little open; the upper lip broad and arched, keeled in the middle, notched at the apex; the lower wooly-bearing in the throat, three-lobed at the apex, the middle lobe smallest. Stamens four, with wooly filaments and very wooly heart-shaped anthers; and a fifth sterile filament smaller than the others. Seeds many, wing-margined. The flowers resembling in shape the head of a snake or tortoise, has given the common name to this plant. Flowers from July to September.

Preparation.—The fresh plant is pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, and having poured it into a well-stoppered bottle, it is allowed to stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

CHENOPODIUM ANTHELMINTICUM, *Linn.*

Synonyms, Ambrina Anthelmintica. Cina Americana.

Nat. Ord., Chenopodiaceæ.

Common Names, Jerusalem Oak. Stinking Weed. Worm-seed.

This is an indigenous perennial plant, with an herbaceous, erect, branching, furrowed stem, which rises from two to five feet in height. The leaves are alternate or scattered, sessile, oblong-lanceolate, attenuated at both ends, sinuated and toothed on the margin, conspicuously veined, of a yellowish-green color, and dotted on their under surface. The flowers are very numerous, small, of the same color as the leaves, and arranged in long, leafless, terminal panicles, composed of slender, dense, glomerate, alternating spikes. This species of chenopodium, known commonly by the names of *worm-seed* and *Jerusalem oak*, grows in almost all parts of the United States, but most vigorously and abundantly in the southern section. It is usually found in the vicinity of rubbish, along fences, in the streets of villages, and in open grounds about the larger towns. It flowers in July to September, and ripens its seeds successively through the autumn. The whole herb has a strong, peculiar, offensive, yet somewhat aromatic odor.

Preparation.—The fresh herb, in flower, is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, and having poured it into a well-stoppered bottle, it is allowed to stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

CHENOPODIUM BOTRYS, *Linn.*

Nat. Ord., Chenopodiaceæ.

Common Names, Jerusalem Oak. Feather Geranium.

This variety is indigenous to Asia and Europe, and naturalized to some extent in North America. It is glandular pubescent, has oblong sinuate-pinnatifid leaves, leafless cymose racemes of greenish flowers, and is strongly aromatic.

Preparation.—The fresh herb is chopped and pounded to a pulp

and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, and having poured it into a well-stoppered bottle, it is allowed to stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

CHENOPODIUM GLAUCUM, *Linn.*

Nat. Ord., Chenopodiaceæ.

Common Name, Oak-leaved Goosefoot.

This plant is indigenous to Europe, where it is commonly found growing on rubbish, places where dung is laid, near houses, walls and ditches containing stagnant, filthy water. It also grows in North America, though rarely, along the streets of towns, and also upon the brackish borders of Onondaga Lake. It is a low plant, stem from one foot to one foot and a half high, now erect, now decumbent, is often striped red and white-green, angular and naked. Leaves sinuately pinnatifid-toothed, oblong, obtuse, pale green above, and lighter, as if dusted with meal, beneath. The flower-racemes stand in the axils and at the end, consisting of green, densely accumulate flowerets without pedicels. Seeds sharp-edged, often vertical. Flowers appear from late summer through autumn.

Preparation.—The fresh herb, the flower, freed from aphids living upon it, is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, and having poured it into a well-stoppered bottle, it is allowed to stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

CHIMAPHILA.

Synonyms, *Chimaphila Corymbosa*, *Pursh.* *Chimaphila Umbellata*, *Nuttall.* *Pyrola Umbellata*, *Linn.*

Nat. Ord., Ericaceæ.

Common Names, Pipsissewa. Prince's Pine.

The pipsissewa is a small evergreen plant, with a perennial, creeping, yellowish root (rhizome), which gives rise to several simple, erect or semi-procumbent stems, from four to eight inches in height, and ligneous at their base. The leaves are wedge-shaped, somewhat lanceolate, serrate, coriaceous, smooth, of a shining sap-green color on the upper surface, paler beneath, and supported upon short footstalks, in irregular whorls, of which there are usually two on the same stem. The flowers are disposed in a small terminal corymb, and stand upon nodding peduncles. The calyx is small and divided at its border into

five teeth or segments. The corolla is composed of five roundish, concave, spreading petals, which are of a white color tinged with red, and exhale an agreeable odor. The stamens are ten, with filaments shorter than the petals, and with large, nodding, bifurcated, purple anthers. The germ is globular and depressed, supporting a thick and apparently sessile stigma, the style being short and immersed in the germ. The seeds are numerous, linear, chaffy, and enclosed in a roundish, depressed, five-celled, five-valved capsule, having the persistent calyx at the base.

This humble but beautiful evergreen is a native of the northern latitudes of America, Europe, and Asia. It is found in all parts of the United States, extending even to the Pacific Ocean. It grows under the shade of woods, and prefers a loose sandy soil, enriched by decaying leaves. The flowers appear in June and July.

Preparation.—The fresh plant in flower is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, and having poured it into a well-stoppered bottle, it is allowed to stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Amount of drug power, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

CHINA.

Synonyms, China Regia. *Cinchona Calisaya*, *Weddell*. *Cinchona Officinalis*, *Hooker*.

Nat. Ord., Rubiaceæ.

Common Names, Calisaya Bark. Yellow Cinchona. Yellow Peruvian Bark.

The genuine cinchona trees are confined exclusively to South America. Those that yield the bark of commerce grow at various elevations upon the Andes, seldom less than 4,000 feet above the level of the sea.

Preparation.—The dried bark is pulverized finely and weighed. Then five parts by weight of alcohol are poured over it, and having put it into a well-stoppered bottle, it is allowed to remain eight days in a dark, cool place, shaking it twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{10}$.

Dilutions must be prepared as directed under Class IV.

Triturations are prepared from the powdered bark, as directed under Class VII.

CHININUM ARSENICUM.

Synonyms, Arseniate of Quinia. *Chininum Arsenicosum*. *Quiniæ Arsenias*.

Common Name, Arseniate of Quinine.

Formula, $2C_{20}H_{24}N_2O_2 \cdot AsH_3O_4 \cdot 4H_2O$.

Preparation of Arseniate of Quinia.—It is obtained in long prisms by saturating hot solution of arsenious acid with quinia.

Properties and Tests.—It crystallizes in long white prisms, is freely soluble in hot water and in alcohol, but sparingly soluble in cold water. The aqueous solution gives no precipitate with chloride of barium, but with nitrate of silver a brick-red precipitate is produced. When treated first with solution of chlorine and afterwards with ammonia, it becomes a splendid emerald-green color.

Preparation for Homœopathic Use.—Arseniate of quinia is prepared by trituration, as directed under Class VII.

CHININUM MURIATICUM.

Synonyms, Chininum Hydrochloricum. Muriate of Quinia. Quiniæ Hydrochloras.

Common Name, Hydro-chlorate of Quinine.

Formula, $C_{20}H_{24}N_2O_2, HCl. 3H_2O$.

Preparation of Muriate of Quinia.—This is prepared by dissolving quinia in warm dilute hydrochloric acid, avoiding an excess of the acid. It is frequently made by mixing hot solutions of chloride of barium and sulphate of quinia, and filtering, while still hot, to separate the sulphate of barium, and setting aside to crystallize.

Properties and Tests.—It crystallizes in white stellate shining needles, which are soluble in twenty-four parts of cold water, in about three parts of alcohol, and nine parts of chloroform. It gives with nitrate of silver a white precipitate, soluble in ammonia, but insoluble in nitric acid. No precipitate is formed on the addition of a small quantity of dilute sulphuric acid, and only a faint one, if any, when chloride of barium is added.

Preparation for Homœopathic Use.—The pure muriate of quinia is prepared by trituration, as directed under Class VII.

CHININUM PURUM.

Synonym, Quinia.

Common Name, Pure Quinine.

Formula, $C_{20}H_{24}N_2O_4$.

Molecular Weight, 324.

Preparation of Quinia.—Quinia is obtained by treating its sulphate with the solution of an alkali, collecting the precipitate, washing it till the water comes away tasteless, then drying it, dissolving it in alcohol, and slowly evaporating the solution.

Properties.—As usually prepared, quinia is whitish, rather flocculent, and not crystalline, but it may, with care, be crystallized from its alcoholic solution in silky needles. It is inodorous and very bitter. At about 300° F. it melts without chemical change, and on cooling becomes brittle. It is soluble in about 400 parts of cold and 250 parts of boiling water, is very soluble in alcohol and ether, and dissolved by the fixed and volatile oils. The alcoholic solution is intensely bitter. Quinia is unalterable in the air.

Tests.—When recently precipitated quinia, diffused in water, is exposed to the action of a stream of carbonic acid gas, the quinia is dissolved, and if the solution be exposed, acicular crystals of carbonate of quinia are deposited, which effloresce in the air, are soluble in alcohol, but insoluble in ether, have an alkaline reaction, and effervesce with acids. After the deposition of the crystals has ceased, the solution yields quinia on evaporation. Freshly precipitated quinia is scarcely soluble to an appreciable extent in an excess of potassa, but is more readily dissolved by ammonia.

Preparations for Homœopathic Use.—The pure quinia is prepared by trituration as directed under Class VII.

CHININUM SULPHURICUM.

Synonyms, Disulphate or Basic Sulphate of Quinia. Quiniæ Sulphas. Sulphate of Quinia. Sulphus Quinicus.

Common Name, Sulphate of Quinine.

Formula, $2\text{C}_{20}\text{H}_{24}\text{N}_2\text{O}_2 \cdot \text{H}_2\text{SO}_4 \cdot 7\text{H}_2\text{O}$.

Molecular Weight, 872.

Preparation of Sulphate of Quinia.—Take of yellow cinchona in coarse powder forty-eight troyounces; muriatic acid three troyounces and a half; lime in fine powder five troyounces; animal charcoal in fine powder, sulphuric acid, alcohol, water, distilled water, each a sufficient quantity. Boil the cinchona in thirteen pints of water mixed with one-third of the muriatic acid, and strain through muslin. Boil the residue twice successively with the same quantity of water and acid as before and strain. Mix the decoctions and while the liquid is hot gradually add the lime previously mixed with two pints of water, stirring constantly until the quinia is completely precipitated. Wash the precipitate with distilled water, and having pressed, dried and powdered it, digest it in boiling alcohol. Pour off the liquid, and repeat the digestion several times, until the alcohol is no longer rendered bitter. Mix the liquids and distil off the alcohol until a brown viscid mass remains. Upon this, transferred to a suitable vessel, pour four pints of distilled water, and, having heated the mixture to the boiling point, add enough sulphuric acid to dissolve the quinia. Then add a troy-ounce and a half of animal charcoal, boil the liquid for two minutes, filter while hot, and set it aside to crystallize. Should the liquid, before filtration, be entirely neutral, acidulate it very slightly with sulphuric acid; should it, on the contrary, change the color of litmus paper to a bright red, add more animal charcoal. Separate the crystals from the liquid, dissolve them in boiling distilled water slightly acidulated with sulphuric acid, add a little animal charcoal, filter the solution, and set it aside to crystallize. Lastly, dry the crystals on bibulous paper with a gentle heat, and keep them in a well-stoppered bottle.

The mother-water may be made to yield an additional quantity of sulphate of quinia by precipitating the quinia with water of ammonia, and treating the precipitated alkaloid with distilled water, sulphuric acid and animal charcoal as before.

Properties.—Sulphate of quinia crystallizes in thin, snow-white, flexible needles, which have a silky lustre and purely bitter taste. A drop of a concentrated solution evaporated on the slide of a microscope crystallizes in stellate groups of thin needles or spikes. It effloresces rapidly on exposure and when heated loses its water of crystallization completely, and at 160° C. (320° F.) becomes phosphorescent on trituration. It requires, according to Van Heijningen, 740, according to Jobst and Hesse, 788 parts of water for solution at 10° C. (50° F.), and at the boiling temperature about 30 parts. It is freely soluble in acidulated water, the solution in diluted sulphuric acid being fluorescent with a blue color. It is more soluble in alcohol than in water, dissolves in 40 parts of glycerin, is insoluble in fixed oils, and nearly insoluble in chloroform and in ether.

Tests.—On adding to its solution an excess of chlorine water followed by ammonia, an emerald-green color is produced; and if, after chlorine water, ferrocyanide of potassium is added and then ammonia, the solution turns a deep red. Dissolved in distilled water, it yields white precipitates with nitrate of barium and with ammonia, the latter precipitate being soluble in an excess of the reagent. It is likewise precipitated by potassa and soda, their carbonates and bicarbonates, by lime-water, tannin and the other general reagents for alkaloids. Its solution in water or dilute acid remains unchanged when kept in the dark, but exposed to sunlight it turns yellowish and brown. In examining the purity of sulphate of quinia the following tests are of service: A drop of an aqueous solution of a quinia salt mixed with a drop of a solution of potassium sulphocyanide, will at once become turbid, and under the microscope show a large number of minute globules, which even after a day has elapsed are not aggregated into groups or crystals. According to Hesse (1878), sulphocyanide of quinia is insoluble in solution of potassium sulphocyanide, and more soluble in water than quinia sulphate; the microscopic test must therefore vary with the quantities used; he also observed that the minute globules are usually followed in a few minutes by many-rayed stellate groups of needles. When ten grains of the salt are agitated in a test-tube with ten minims of officinal water of ammonia and sixty grains of ether, and allowed to rest, the liquid separates into two transparent and colorless layers without any white or crystalline matter at the surface of contact.

Other fraudulent admixtures or substitutions are recognized as follows: *Mineral impurities* by the fixed residue left on igniting a portion of the salt upon platinum foil; *ammonia salts* by the ammoniacal odor given off on heating a portion of the salt with dilute potassa solution; *stearic acid, starch, cotton fibre* and similar insoluble substances by their insolubility in dilute sulphuric acid; *gum* by its insolubility in alcohol; *salicin, phlorizin* and *sugar* by the red or brown color occasioned with warm concentrated sulphuric acid; *mannit* and other substances soluble in water by boiling a portion of the suspected salt with solution of baryta, passing carbonic acid gas into it, and evaporating the filtrate; pure sulphate of quinia thus treated will leave only an insignificant residue.

Preparation for Homœopathic Use.—The pure sulphate of quinia is prepared by trituration as directed under Class VII.

CHINOIDIN.

Synonyms, Amorphous Quinia. Quinoidine.

Preparation of Chinoidin.—The mother-liquor left after the crystallization of sulphate of quinia in the preparation of that salt, contains one or more amorphous alkaloids, which are known collectively as *chinoidin*, *chinoidin*, or *quinoidin*. By precipitating with an alkali, washing and drying, it is obtained in a brown mass.

Properties.—The brown mass has a resin-like appearance, is brittle at ordinary temperature, breaks with a glossy conchoidal fracture, and dissolves readily in alcohol and dilute acids. Treated with hot water, the filtrate is not colored by potassa solution, and when evaporated leaves but a small residue. It has a very slight taste, but its solutions are very bitter; on incineration it leaves only a small proportion of ashes.

Tests.—If its solution in a dilute acid yields upon the addition of ammonia exactly as much precipitate as there was of the original substance dissolved, it may be considered pure.

Preparation for Homœopathic Use.—Two parts by weight of chinoidin are dissolved in nine parts by weight of ninety-five per cent. alcohol.

Amount of drug power, $\frac{1}{16}$.

Dilutions must be prepared as directed under Class VI—*a*.

Triturations are prepared of pure chinoidin, as directed under Class VII.

CHIONANTHUS VIRGINICA, Linn.

Nat. Ord., Oleaceæ.

Common Names, Fringe-Tree. Snow-flower.

Chionanthus Virginica is a low tree or shrub, found growing on riverbanks in southern Pennsylvania and southward. Its leaves are oval, oblong, or obovate-lanceolate; flowers on slender pedicels; drupe purple, with a bloom, ovoid, six to eight lines long. The flowers, appearing in June, have petals one inch long, narrowly linear, acute, varying to five or six in number, which are barely united at the base. Calyx four-parted, very small, persistent, stamens two (rarely three or four), on the very base of the corolla, very short. Stigma notched. Drupe fleshy, globular, becoming one-celled, and one to three-seeded.

Preparation.—The fresh bark is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, and having poured it into a well-stoppered bottle, it is allowed to stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Amount of drug power, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

CHLORALUM.

Synonyms, Chloral Hydras. Chloral Hydrate. Chloralum Hydratum Crystallisatum.

Common Names, Chloral. Hydrate of Chloral.

Formula, $C_2HCl_3O \cdot H_2O$.

Molecular Weight, 165.5.

Formation and Preparation of Hydrate of Chloral.—Chloral was discovered by Liebig (1832) and its production and composition were soon after determined by him and by Dumas. The results of these investigations prove that when dry chlorine is passed into absolute alcohol, aldehyd and hydrochlorid acid are first formed: $C_2H_6O + Cl_2 = C_2H_4O + 2HCl$. By the continued action of dry chlorine gas, three atoms of hydrogen are abstracted from the aldehyd, with the formation of hydrochloric acid, and are replaced by three atoms of chlorine, producing chloral; the reaction is explained by the following equation: $C_2H_4O + 3Cl_2 = 3HCl + C_2HCl_3O$. Wurtz and Vogt regard the reaction as much more complicated. Other products of decomposition are formed in smaller quantities, and necessitate the subsequent purification of the chloral. The yield is very materially reduced if water be present, in which case a portion of the aldehyd at first produced is converted into acetic acid ($C_2H_4O + H_2O + Cl_2 = C_2H_4O_2 + 2HCl$), and this acid reacting with some alcohol forms acetic ether, which is not transformed into chloral by the action of chlorine. In preparing chloral, therefore, the materials reacting upon one another must be as nearly free from water as they can be obtained. Chlorine gas is generated in the usual manner, and passed first into a Woulf's bottle, where some of the moisture is condensed, then over chloride of calcium or through sulphuric acid, by which it is completely dried, and finally into the absolute alcohol, which is kept cool as long as the chlorine gas is rapidly absorbed; but after a few days requires to be warmed, the heat being slowly increased until at the end of the process it has reached 60° to 70° C. (140° to 158° F.). The whole process requires about two weeks (for 600 grams alcohol three days, Dumas); but if larger quantities of alcohol be operated upon, a longer time is required. In the experience of Dr. Squibb (1870), 92 pounds of alcohol required the continuous generation of chlorine gas for 28 days, using about $1\frac{1}{2}$ ton of mixture of a manganese binoxide and common salt, and yielded about 160 pounds of crude chloral. Large quantities of hydrochloric acid gas containing some chloral escape during the latter part of the process, and, if passed through a reversed condenser, the vapors of the latter will be condensed and returned to the vessel. Kræmer observed (1874) that the ethereal liquid which accumulates beneath the hydrochloric acid is a mixture of the *chlorides of ethylene* and *ethylidene*.

Crude chloral for its purification should be treated first with about its own weight of strong sulphuric acid, by which the hydrate and alcoholate of chloral are decomposed, and colorless chloral separates as an oily layer, which is at once rectified over some burned lime. To avoid combustion, the lime must be completely covered by the liquid. Dr.

Squibb prefers to distil the chloral directly from the sulphuric acid, to combine the distillate partly with water, rectifying it over a mixture of lime and calcium carbonate, and hydrating this second distillate completely by adding the necessary quantity of water, ascertained by calculation from the weight of the first distillate (82 parts require 10 parts of water); while still hot, the mass is poured upon plates covered with a bell-glass, and allowed to crystallize.

Properties.—Chloral hydrate is met with in white crystalline masses, or in separate colorless crystals of a saccharoid aspect, attracts moisture in a damp atmosphere, but in a nearly dry atmosphere evaporates slowly without liquefying. It fuses between 56° and 58° C. (133° and 136° F.), and evaporates without leaving any residue. It is soluble in four parts of chloroform, and in less than its own weight of water, alcohol, or ether. Chloral which has been insufficiently hydrated, contains the insoluble modification, and is, therefore, not completely soluble in water. It has a peculiar, somewhat aromatic odor, the pungency of which is increased with the temperature. When pure its vapors are but slightly affected by the vapors of ammonia, except at a somewhat elevated temperature, when white clouds are produced. The solution of chloral hydrate in strong alcohol has a neutral reaction, but when dissolved in water, it slightly reddens blue litmus paper; it is, however, not precipitated by nitrate of silver (absence of hydrochloric acid). Treated with soda or other alkaline hydrate, chloral is decomposed into chloroform and formiate; $C_2HCl_3O + KHO$ yields $CHCl_3 + KCHO_2$.

Tests.—The presence of chloral alcoholate is indicated by the combustion which takes place on heating a sample upon platinum foil over a flame. Smaller quantities are detected by the turbidity resulting from the production of iodoform, if a strong aqueous solution is warmed with a slight excess of potassa solution, iodine being then added as long as it is decolorized. On cooling, microscopic crystals of iodoform will separate. The presence of various organic impurities is detected by warming the chloral hydrate with sulphuric acid, which will then acquire a brown color. If decomposition has set in, the aqueous solution of chloral hydrate on being acidulated with sulphuric acid, will readily decolorize a weak solution of potassium permanganate, and cause a white precipitate with nitrate of silver. The decomposition of chloral hydrate by alkalis affords a means of estimating its value; when perfectly pure, 100 grains of it dissolved in an ounce of water, and mixed with 30 grains of slaked lime and distilled, yield 72.2 grains (not less than 70 grains, *Br.*) of chloroform. Moist chloral hydrate yields less in proportion to the excess of moisture; chloral alcoholate produces only 60 per cent. of chloroform. V. Meyer and Heffter (1873) estimate the purity of chloral from the amount of formic acid produced, by warming the solution of chloral hydrate with an excess of normal solution of soda, and determining the excess of soda, volumetrically, by an acid. Pure sodium hydrate will decompose 4.1375 times its weight of pure chloral hydrate.

Preparation for Homœopathic Use.—Two parts by weight

of pure chloral hydrate are dissolved in nine parts by weight of alcohol.

Amount of drug power, $\frac{1}{15}$.

Dilutions must be prepared as directed under Class VI—*a*.

CHLOROFORMUM.

Common Name, Chloroform.

Formula, CH Cl_3 .

Molecular Weight, 119.5.

Origin and Preparation of Chloroform.—Chloral is formed from alcohol and chlorine, and on decomposing chloral by an alkali, chloroform and a formiate of the alkali are produced; the conditions for these two reactions are present on bringing together alcohol and chlorinated lime, the chlorine of which converts the former into chloral, which is at once decomposed by the calcium hydrate, yielding chloroform and calcium formiate, Ca 2 C H O_2 . Omitting the formation of chloral, the reaction of chlorinated lime upon alcohol is explained by the equation: $16 \text{ Ca H Cl O}_2 + 4 \text{ C}_2 \text{ H 6 O}$ yields $2 \text{ C H Cl}_3 + 3 (\text{Ca 2 C H O}_2) + 5 \text{ Ca Cl}_2 + 8 \text{ Ca H}_2 \text{ O}_2 + 8 \text{ H}_2 \text{ O}$. Calcium formiate is, however, not found in the residue of the distillation, but is decomposed by another portion of the chlorinated lime into calcium carbonate and chloride and water: $3 (\text{Ca 2 C H O}_2) + 6 \text{ Ca H Cl O}_2$ yields $6 \text{ Ca C O}_3 + 3 \text{ Ca Cl}_2 + 6 \text{ H}_2 \text{ O}$. The theoretical quantity of chloroform obtainable according to these reactions would be 30 per cent. of the weight of available chlorine contained in the chlorinated lime; by working on the large scale, the yield of chloroform ranges between 22 and 24 per cent. To prepare chloroform, 6 parts of the assayed chlorinated lime are mixed with about 24 parts of water, and the mixture strained into a still; one part of stronger alcohol is added and the whole heated to $40^\circ \text{ C. (122}^\circ \text{ F.)}$, when the heat is nearly wholly withdrawn. The reaction now proceeds rapidly, the temperature rises and the chloroform mixed with some alcohol distils over. The distillate is washed with water, the subsiding layer constitutes *crude chloroform*.

Crude chloroform varies in specific gravity between 1.45 and 1.49, and imparts to strong sulphuric acid, after having been agitated with it, a brownish or brown color, the degree of coloration depending upon the amount of impurities present.

Purification.—Take of commercial chloroform one hundred troy-ounces; sulphuric acid twenty troyounces; stronger alcohol twelve fluidrachms; carbonate of sodium five troyounces; lime in coarse powder half a troy ounce; water ten fluidounces. Add the acid to the chloroform, and shake them together occasionally during twenty-four hours. Separate the lighter liquid, and add to it the carbonate of sodium previously dissolved in the water; agitate the mixture thoroughly for half an hour, and set it aside; then separate the chloroform from the supernatant layer, and mix it with the alcohol. When the mixture has separated into two transparent layers, transfer the chloroform into a dry retort, add the lime, and distil, by means of a water-bath, into a well-cooled receiver, taking care that the temperature in the retort

does not rise above 67.2° C. (153° F.), until one troyounce of residue is left. Keep the distilled liquid in well-stoppered bottles.

Properties.—Pure chloroform is a limpid colorless liquid, not inflammable, of an agreeable ethereal odor and not saccharine taste. Its density at 15° C. is 1.499 (*Hirsch*); but in this state it is very prone to change when in contact with air and diffused light; it keeps, however, entirely unaltered in direct sunlight if the air has been completely expelled from the vessel. Chloroform reduced by the addition of alcohol to 1.49 is readily decomposed by sunlight, more slowly when exposed to diffused daylight. If reduced to the density 1.480 to 1.484, it remains unaltered in diffused sunlight for years, and for ten hours in direct sunlight, provided all moisture has been excluded; in the presence of some water, decomposition generally commences. Chloroform below the density 1.475 is not affected by light. This behavior explains the necessity of keeping chloroform of 1.49 protected from the light, which is not required if the density is lowered to about 1.48 by the addition of one per cent of alcohol. The products of decomposition have the suffocating odor of *phosgene gas*, CO Cl_2 , redden and often bleach moistened blue litmus, and liberate iodine from potassium iodide; even an incipient decomposition is detected by evaporating spontaneously a drachm of chloroform with a drop of a neutral solution of litmus which will thereby acquire a red color. Partially decomposed chloroform may be restored to its original purity by agitating it with solution of sodium carbonate, and rectifying it afterwards over a little lime. Previous treatment with strong sulphuric acid will be necessary only when it becomes colored on being agitated with the chloroform.

When chloroform is shaken in a perfectly clean glass-stoppered vial, with an equal bulk of sulphuric acid, no color should be imparted to either liquid after remaining in contact for twenty-four hours. Should a coloration appear, the chloroform must be regarded as unfit for inhalation, and should be purified by the officinal formula. When it is agitated with an aqueous solution of nitrate of silver, a white precipitate of chloride of silver is not produced. The officinal chloroform placed in a dry flask begins to boil at 61° C. (142° F.). It is slightly soluble in water, to which it imparts its taste, and dissolves readily in alcohol, ether, the fixed and volatile oils, benzol and carbon bisulphide; it dissolves paraffin, gutta serena, caoutchouc, many resins, most alkalis, iodine, bromine, etc.

Tests.—The purity of chloroform is ascertained by its complete volatility, its neutral reaction, its behavior to concentrated sulphuric acid, nitrate of silver, and iodide of potassium, and by its physical properties.

Preparation for Internal Use.—Two parts by weight of pure chloroform are dissolved in nine parts by weight of alcohol.

Amount of drug power, $\frac{1}{10}$.

Dilutions must be prepared as directed under Class VI—*a*.

CHLORUM.**Synonym,** Chlorinum.**Common name,** Chlorine.**Symbol,** Cl.**Atomic Weight,** 35.5.

Chlorine was discovered by Scheele (1774). It is a greenish-yellow gas, having the sp. gr. 1.47, and becoming liquid at 15° C., under a pressure of four atmospheres. It is a supporter of combustion. When the attempt is made to breathe it, even much diluted, it excites cough and a sense of suffocation, and causes a discharge from the mucous membrane of the nostrils and bronchial tubes. Breathed in considerable quantities it produces spitting of blood, violent pains, and sometimes death.

Preparation of Aqua Chlorini (Chlorine Water).—Take of black oxide of manganese in coarse powder, half a troyounce; muriatic acid, three troyounces; water, four fluidounces; distilled water, twenty fluidounces. Introduce the oxide into a flask; add the acid previously diluted with two fluidounces of the water, and apply a gentle heat. Conduct the generated chlorine by suitable tubes, through the remainder of the water, contained in a small intermediate vessel, to the bottom of a four-pint bottle containing the distilled water, and loosely stopped with cotton. When the air has been entirely displaced by the gas, disconnect the bottle from the apparatus, and, having inserted the stopper, agitate the contents, loosening the stopper from time to time, until the gas ceases to be absorbed. Lastly, pour the chlorine water into a bottle of just sufficient capacity to hold it, stop it securely and keep it in a cool place protected from the light.

Properties.—Chlorine water is a clear greenish-yellow liquid possessing the suffocating odor of chlorine, and separating crystals of chlorine hydrate when cooled to the freezing point of water. It instantly discharges the color of a diluted solution of indigo, and bleaches vegetable coloring matters generally. Exposed to the light it is decomposed into hydrochloric acid and oxygen.

Tests of Purity.—Chlorine water should evaporate without leaving any residue. Agitated with an excess of mercury until the odor of chlorine has disappeared, the remaining liquid reddens litmus paper but slightly if at all (hydrochloric acid).

Preparation for Homœopathic Use.—The freshly prepared chlorine water, according to above formula, contains about three per cent. of chlorine gas; we take one part of it by weight and mix it with two parts by weight of distilled water.

Amount of drug power, 100.

Dilutions must be prepared as directed under Class V—β.

CICUTA.**Synonyms,** *Cicuta Virosa*, Linn. *Cicuta Aquatica*.**Nat. Ord.,** Umbelliferae.**Common Names,** Cow-bane. Water-hemlock. Water-parsnip.

This perennial plant inhabits the borders of ditches and rivulets,

swamps, meadows, ponds, lakes, etc., all over Germany and the north and west of France; the root is thick, white, fleshy, elongated, transparent, full of hairs and hollow; it contains in its bark a yellow juice; its odor is strong and disagreeable, its taste acrid and caustic; stem straight, from one to two feet high, ramose, fistulous, glabrous, striated; leaves compound, two or three times winged with lanceolate, incised leaflets, like the teeth of a saw; umbels loose, naked; involucelles three or five rayed; flowers white, uniform; fruit ovoid, furrowed with ten small entire sides. The whole plant is very poisonous, proving fatal to most animals which feed upon it, though said to be eaten with impunity by goats and sheep. Several instances are on record of children who have died from eating the root by mistake for parsnip.

Preparation.—The fresh root of the plant just coming into bloom is chopped and pounded to a fine pulp and pressed out *lege artis* in a piece of new linen. The expressed juice is then, by brisk agitation, mingled with an equal part by weight of alcohol. This mixture is allowed to stand eight days in a well-stoppered bottle, in a dark, cool place, and then filtered.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class I.

CIMEX LECTULARIUS.

Class, Insecta.

Order, Heteroptera.

Family, Cimicidæ.

Common Name, Bed-Bug.

This insect is too well known to require a description.

Preparation.—The live insect, crushed, is covered with five parts by weight of alcohol. Having poured it into a well-stoppered bottle, it is allowed to remain eight days in a dark, cool place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Amount of drug power, $\frac{1}{16}$.

Dilutions must be prepared as directed under Class IV.

CIMICIFUGA.

Synonyms, *Actæa Racemosa*, Linn. *Cimicifuga Racemosa*, Elliott. *Macrotys Racemosa*.

Nat. Ord., Ranunculaceæ.

Common Names, Black Cohosh. Black Snake Root.

This is a tall stately plant, having a perennial root, and a simple herbaceous stem, which rises from four to eight feet in height. The leaves are large, and ternately decomposed, having oblong-ovate leaflets, incised and toothed at their edges. The flowers are small, white, and disposed in a long, terminal, wand-like raceme, with occasionally one or two shorter racemes near its base. The calyx is white, four-leaved, and deciduous; the petals are minute, and shorter than the stamens; the pistil consists of an oval germ and sessile stigma. The fruit is an ovate capsule containing numerous flat seeds.

The plant is a native of the United States, growing in shady or rocky woods from Canada to Florida, and flowering in June and July.

Preparation.—The fresh root is pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, and having poured it into a well-stoppered bottle, it is allowed to stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{4}$.

Dilutions must be prepared as directed under Class III.

CINA.

Synonyms, Absinthium Santonica. *Artemisia Cina*, *Berg.* *Artemisia Contra*.

Nat. Ord., Compositæ.

Common Names, European Wormseed. Levant Wormseed. Tartarian Southernwood.

It is known, that the drug brought to market under the name "wormseed" does not consist of seed, but of the undeveloped flowers, mixed with the scales of the calyx and the pedicels of different species of the genus *artemisia*. We prefer the sort brought to us as *Semen Cinæ Levanticæ* to all others; it consists of small, ovate-oblong, green-yellow flowerheads, becoming darker and more brownish by age, whose envelope is formed of tight recumbent, ovate, shining scales. They have a peculiar nauseous-aromatic odor, which is somewhat like camphor, and a rough, loathsome bitterish taste.

Preparation.—The dried flower, finely powdered, is covered with five parts by weight of alcohol, and allowed to remain eight days in a well-stoppered bottle, in a dark, cool place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{16}$.

Dilutions must be prepared as directed under Class IV.

CINCHONINUM SULPHURICUM.

Synonym, Cinchoninæ Sulphas.

Common Name, Sulphate of Cinchonia.

Formula, $2(C_{20}H_{24}N_2O) \cdot H_2SO_4 \cdot 2H_2O$.

Molecular Weight, 750.

Preparation of Sulphate of Cinchonia.—Take of the mother-water, remaining after the crystallization of sulphate of quinia in the process for preparing that salt, a convenient quantity; solution of soda, alcohol, diluted sulphuric acid, animal charcoal in fine powder, each a sufficient quantity. To the mother-water add gradually, with constant stirring, solution of soda, until the liquid becomes alkaline. Collect on a filter the precipitate formed, wash it with water, and dry it. Then wash it with successive small portions of alcohol, to remove other alkalis which may be present. Mix the residue with eight times its

weight of water, and, having heated the mixture, add gradually diluted sulphuric acid, until it is neutralized and becomes clear. Then boil the liquid with animal charcoal, filter it while hot, and set it aside to crystallize. Lastly, drain the crystals, and dry them on bibulous paper. By evaporating the mother liquid more crystals may be obtained.

Properties.—Sulphate of cinchonia crystallizes in hard transparent, oblique prisms, which have a glassy lustre, lose their (4.8 per cent.) water of crystallization at 100° C. (212° F.), fuse like wax at a somewhat higher temperature, then acquire a handsome red color, and finally burn, giving off a peculiar empyreumatic odor, and leaving no residue. It is apt to form supersaturated solutions with water, of which it requires 14 parts to dissolve it at the boiling, and 54 parts at the ordinary temperature. It requires 1.5 of boiling and 5.8 parts of cold 80 per cent. alcohol for solution, dissolves in 60 parts of chloroform, readily in dilute acids, and is almost insoluble in ether. Its solutions have a very bitter taste, and are destitute of fluorescence.

Tests.—The aqueous solution yields precipitates with tannin, bicarbonate of potassium, ammonia, chloride of gold, iodohydrargyrate of potassium, phosphomolybdic acid, and other reagents for alkaloids. Chlorine water added to its solution and afterwards ammonia do not produce a green coloration (quinia and quinidia), but a white precipitate of cinchonia. The solution yields a white precipitate with barium chloride (sulphate), which is insoluble in dilute hydrochloric acid. The crystals contain 82.14 per cent. of cinchonia, or two molecules of the alkaloid, in combination with one of sulphuric acid and two (4.8 per cent.) of water of crystallization. When a drop of a saturated aqueous solution of this salt is mixed with a drop of solution of potassium sulphocyanide, crystals will be formed which, under the microscope, will appear long, radiating, and considerably branched, resembling antlers or equisetum.

Preparation for Homœopathic Use.—The pure sulphate of cinchonia is prepared by trituration, as directed under Class VII.

CINNABARIS.

Synonyms, Hydrargyri Sulphuretum Rubrum. Mercurius Sulphuratus Ruber.

Common Names, Vermilion. Red Sulphide of Mercury. Cinabar.

Formula, Hg S.

Molecular Weight, 232.

Preparation of Cinabar.—Take of mercury, forty troyounces; sublimed sulphur, eight troyounces. To the sulphur, previously melted, gradually add the mercury, with constant stirring, and continue the heat until the mass begins to swell. Then remove the vessel from the fire and cover it closely to prevent the contents from igniting. When the mass is cold, rub it into powder and sublime. The preparation of vermilion is carried on in large establishments, and will hardly ever be attempted by the pharmacist, except as an experiment. It may be obtained in the dry or humid way. The official process belongs to the

former class, but a large excess of sulphur is directed, 6½ troyounces being sufficient for the quantity of mercury; the excess is volatilized before the cinnabar is condensed. If the black mass obtained in the first part of the above process is digested with solution of potassa and some potassium sulphuret, at a temperature of about 45° C. (113° F.), it will be gradually converted into vermilion.

Properties and Tests.—Cinnabar is seen in commerce in the form of a bright scarlet-red powder which, on being heated, becomes brown, then black, and finally volatilizes, and assumes its red color again on cooling. Heated in contact with the air, it burns with a blue flame, emitting the odor of sulphurous acid. Nitro-muriatic acid dissolves it with the separation of sulphur and the production of sulphuric acid and mercuric chloride. Its complete volatility by heat insures the absence of red lead and basic lead chromate (American vermilion); and when it is treated with warm solution of potassa, the colorless solution, on being acidulated, would yield a yellow or orange precipitate, if sulphides of arsenic or antimony were present.

Preparation for Homœopathic Use.—The pure cinnabar is prepared by trituration, as directed under Class VII.

CINNAMOMUM.

Synonyms, Cinnamomum Zeylanicum, *Nees*. *Laurus Cinnamomum*, *Linn.*

Nat. Ord., Lauracæ.

Common Name, Cinnamon.

This is a tree about twenty or thirty feet high, with a trunk from twelve to eighteen inches in diameter, and covered with a thick, scabrous bark. The branches are numerous, strong, horizontal, and declining; and the young shoots are beautifully speckled with dark green and light orange colors. The leaves are opposite for the most part, coriaceous, entire, ovate, or ovate-oblong, obtusely pointed, and three-nerved, with the lateral nerves vanishing as they approach the point. There are also two less obvious nerves, one on each side arising from the base, proceeding towards the border of the leaf, and then quickly vanishing. The footstalks are short and slightly channeled, and, together with the extreme twigs, are smooth and without the least appearance of down. The flowers are small, white, and arranged in axillary and terminal panicles. The fruit is an oval berry, which adheres like the acorn to the receptacle, is larger than the black currant, and when ripe has a bluish-brown surface, diversified with numerous white spots. This species is a native of Ceylon, where it has long been cultivated.

Preparation.—The Ceylon cinnamon bark is finely powdered, and covered with five parts by weight of alcohol. Having poured it into a well-stoppered bottle, it is allowed to remain eight days in a dark, cool place, shaking it twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, 1℥.

Dilutions must be prepared as directed under Class IV.

CISTUS CANADENSIS.

Synonyms, *Cistus Canadense*, *Willdenow.* *Helianthemum Canadense*, *Michaux.* *Heteromeris Canadense.*

Nat. Ord., Cistaceæ.

Common Names, Frostwort. Holly Rose. Rock Rose.

This plant is an herbaceous perennial, from six to eighteen inches high, with a slender, rigid, pubescent stem, oblong, somewhat lanceolate leaves about an inch in length, and large yellow flowers, the calyx and peduncles of which, as well as the branches, are covered with a white down. The flowers which first appear are terminal, few or solitary, large, on short peduncles, with erosely emarginate petals about twice as long as the calyx. Later in the season, or on different plants, other flowers appear, very small, axillary, solitary or somewhat clustered, nearly sessile, sometimes destitute of petals, and usually wanting the two outer sepals of the calyx. The fruit is a capsule, smooth and shining, with brown, scabrous, punctate seeds. Eaton states that, in the months of November and December, he has seen hundreds of these plants sending out, near the roots, broad, thin, curved ice crystals, about an inch in breadth, which melted in the day, and were renewed in the morning. (*Manual of Botany*, 7th ed., p. 246.)

Frostwort grows in all parts of the United States, preferring dry, sandy soils, and flowering in June in the Middle States.

Preparation.—The fresh plant in flower is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, and having poured it into a well-stoppered bottle, it is allowed to remain eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Amount of drug power, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

CLEMATIS.

Synonyms, *Clematis Erecta*, *Linn.* *Flammula Jovis.*

Nat. Ord., Ranunculaceæ.

Common Name, Upright Virgin's Bower.

In central and southern Europe this plant is to be found on sunny hills, in bushes and on the side of forests. The stem is three to four feet high, erect, hollow, striped and smooth, has pinnate-cleft leaves, the incisions of which on the base are cordate or ovate, pointed and entire. Flowers, multipartite cymes, the sepals oblong-spatulate, naked, having at the margin on the outer side hair like down; petals white, four-petaled. The fresh plant has a pungent acridness, irritating the nose and blistering the tongue when chewed.

Preparation.—The fresh leaves and stems of the plant just coming into bloom, are chopped and pounded to a pulp and pressed out *lege artis* in a piece of new linen. The expressed juice is then by *basisk*

agitation mingled with an equal part by weight of alcohol. This mixture is allowed to stand eight days in a dark, cool place, and then filtered.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class I.

CLEMATIS VIRGINIANA, *Linn.*

Synonyms, Clematis Cordata. Clematis Purshii.

Nat. Ord., Ranunculaceæ.

Common Name, Common Virgin's Bower.

This is an indigenous climber, growing on river-banks, climbing over shrubs. Stems are smooth. Leaves bearing three ovate acute leaflets, which are cut or lobed and somewhat heart-shaped at the base; tails of the fruit plumose. The axillary peduncles bear clusters of numerous white flowers (sepals obovate, spreading); the fertile ones succeeded in autumn by the conspicuous feathery tails of the fruit. Flowers appear in July and August.

Preparation.—The fresh leaves are chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, pour it into a well-stoppered bottle and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

CLEMATIS VITALBA, *Linn.*

Nat. Ord., Ranunculaceæ.

Common Names, Old Man's Beard. Traveller's Joy.

This is a climbing under-shrub, growing in hedges and thickets, most common on chalky soil, in Europe, from Holland southwards, Northern Africa and Western Asia. Leaflets two to three inches long, ovate-cordate, entire toothed or lobed; petioles persistent when twining. Flowers one inch in diameter, odorous, greenish-white. Sepals four, pubescent. Achenes hairy; awns one inch, feathery. Flowers appear in July and August.

Preparation.—The fresh leaves are chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, it is poured into a well-stoppered bottle, and allowed to stand eight days, in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

COBALTUM METALLICUM.

Common Names, Cobalt. Metallic Cobalt.

Symbol, Co.

Atomic Weight, 58.8.

This substance bears, in many respects, a close resemblance to nickel, with which it is often associated in nature.

The pure metal is obtained in a spongy form by reducing the chloride of cobalt by hydrogen.

Properties.—Cobalt is a white, brittle, very tenacious metal, having a specific gravity of 8.5, and a very high melting point. It is unchanged in the air, and but feebly attacked by dilute hydrochloric and sulphuric acids. It is strongly magnetic.

Preparation for Homœopathic Use.—The pure metal is prepared by trituration, as directed under Class VII.

COCA.

Synonyms, Erythroxylon Coca, *Lamarek.* Hayo. Ipadu.

Nat. Ord., Erythroxylaceæ.

Common Name, Coca.

This is a small shrub about four feet high, with numerous spreading purplish-brown branches. The leaves are alternate, about two inches long, obovate, or oval-oblong, rather obtuse and frequently emarginate, somewhat narrowed into the short petiole, entire on the margin, rather thin, smooth, reticulate on both sides, with a prominent midrib, on each side of which is a curved line running from the base to the apex, and representing two longitudinal folds. It has small, yellowish, five-petalous flowers in axillary clusters of three or four, ten hypogynous stamens, and an oblong, red and smooth drupaceous fruit containing a single albuminous seed. The leaves when collected are carefully dried in the sun, to preserve their green color; they have a slight but agreeable odor, similar to that of tea, and a somewhat bitter and aromatic taste. The shrub is indigenous to the mountains of Peru and Bolivia, and is cultivated in both of these countries, also in some parts of Colombia, Brazil, and the Argentine Republic.

Preparation.—The dried leaves, finely powdered, are covered with five parts by weight of alcohol, and allowed to remain eight days in a well-stoppered bottle, in a dark, cool place, and shaken twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{16}$.

Dilutions must be prepared as directed under Class IV.

COCCIONELLA.

Synonyms, Chrysomela Septempunctata. Coccionella Septempunctata.

Class, Insecta.

Order, Coleoptera.

Family, Coccinellidæ.

Common Names, Lady-Bird. Lady-Cow. Sun-Chafer.

This is a very well-known and widely spread insect, living on vegetables in gardens and fields. Its head and thorax are black, flat, under-body and feet black, wing-shells arched, oval, red or orange-yellow, with black dots, usually seven in number of unequal size, the wings nearly as long again as the body. When touched with the hand there issues from the joints of the feet a thickish juice, yellow like gambogia.

Preparation.—The live insects, collected in the month of June, are pounded to a pulp and covered with five parts by weight of alcohol. Having poured this into a well-stoppered bottle, it is allowed to remain eight days in a dark, cool place, and shaken twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{16}$.

Dilutions must be prepared as directed under Class IV.

COCCULUS.

Synonyms, *Anamirta Cocculus*, *Wight and Arnott*. *Cocculus Indicus*. *Menispermum Cocculus*, *Linn.*

Nat. Ord., Menispermaceæ.

Common Name, India Berries.

This is a climbing shrub, with a suberose or corky bark; thick, coriaceous, smooth, shining, roundish or cordate leaves, sometimes truncate at the base; the flowers in lateral compound racemes. It is a native of the Malabar Coast, and of Eastern Insular and Continental India.

Cocculus Indicus, as found in the shops, is roundish, somewhat kidney-shaped, about as large as a pea, having a thin, dry, blackish, wrinkled exterior coat, within which is a ligneous bivalvular shell, enclosing a whitish, oily, very bitter kernel. It bears some resemblance to the bay-berry, but is not quite so large, and may be distinguished by the fact, that in the *cocculus indicus* the kernel never wholly fills the shell.

Preparation.—The dried fruit finely powdered is covered with five parts by weight of alcohol, poured into a well-stoppered bottle, and allowed to remain eight days at a moderate temperature in a dark place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{16}$.

Dilutions must be prepared as directed under Class IV.

COCCUS CACTI, *Linn.*

Synonym, *Coccionella Indica*.

Class, Insecta.

Order, Hemiptera.

Family, Coccidæ.

Common Name, Cochineal.

The coccus is a genus of hemipterous insects, having the snout or rostrum in the breast, the antennæ filiform, and the posterior part of the abdomen furnished with bristles. The male has two erect wings, the female is wingless. The *C. Cacti* is characterized by its depressed,

downy, transversely wrinkled body, its purplish abdomen, its short and black legs, and its subulate antennæ, which are about one-third of the length of body. It is found wild in Mexico and Central America, inhabiting different species of Cactus and allied genera of plants. During the rainy season, a number of the females are preserved under cover, upon the branches of the plant, and, after the cessation of the rains, are distributed upon the plants without. They perish quickly, after having deposited their eggs. These, hatched by the heat of the sun, give origin to innumerable minute insects, which spread themselves over the plant. The males, of which, according to Mr. Ellis, the proportion is not greater than one to one-hundred or two-hundred females, being provided with wings and very active, approach and fecundate the latter. After this period, the females, which before moved about, attach themselves to the leaves, and increase rapidly in size; so that, in the end, their legs, antennæ, and proboscis are scarcely discoverable, and they appear more like excrescences on the plant than distinct animated beings. They are now gathered for use, by detaching them by means of a blunt knife, a quill, or a feather; a few being left to continue the race. They are destroyed either by dipping them, enclosed in a bag, into boiling water, or by the heat of a stove. In the former case they are subsequently dried in the sun. The males, which are much smaller than the full-grown females, are not collected.

As kept in the shops, the finer cochineal, *grana fina* of Spanish commerce, is in irregularly circular or oval, somewhat angular grains, about one-eighth of an inch in diameter, convex on one side, concave or flat on the other, and marked with several transverse wrinkles. They are of a reddish-gray color, formed by an intermixture of the dark color of the insect with the whiteness of a powder by which it is almost covered, and with patches of a rosy tinge irregularly interspersed. Cochineal has a faint heavy odor, and a bitter slightly acidulous taste. Its powder is of a purplish-carmine color, tinging the saliva intensely red.

Preparation.—The dried insects, previously cleansed by drenching with tepid water, are coarsely powdered, and covered with five parts by weight of alcohol; having poured this into a well-stoppered bottle, it is allowed to remain fourteen days in a dark, cool place, and shaken twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{16}$.

Dilutions must be prepared as directed under Class IV.

CODEINUM.

Synonyms, Codeia. Codein.

Formula, $C_{18}H_{21}NO_3$.

Preparation of Codeia.—This alkaloid, found in opium, was discovered by Robiquet, in 1832. In preparing morphia by Gregory's process, after precipitating with calcium chloride, the chlorides of morphia and codeia crystallize together; on redissolving them in water, and adding ammonia, morphia alone is precipitated, and the codeia,

remaining in solution, may be obtained by evaporation and crystallization. It may be purified by treating the crystals with hot ether, which dissolves them, and yields the codeia in colorless crystals by spontaneous evaporation.

Properties.—It has a bitter taste and strong alkaline reaction, melts in boiling water, and dissolves in seventeen parts of it, or in eighty parts at the ordinary temperature, and to about the same extent in ammonia water. Its aqueous solution decomposes the salts of iron and other metals. The alkaloid is easily soluble in alcohol, ether, benzol, and carbon bisulphide, but it is nearly insoluble in petroleum benzol and in potassa, and is separated by the latter from the salts as an oily liquid, which gradually crystallizes.

Tests.—It yields, with pure sulphuric acid, a colorless solution, but a blue solution in the presence of a trace of ferric salt. A similar reaction is produced with *Erdmann's reagent* (1861) (consisting of 20 grams pure sulphuric acid, and 10 drops of a mixture made with 6 drops of nitric acid, spec. grav. 1.25, and 100 grams of water). Fröhde's test liquid dissolves the alkaloid with a dingy green color, changing to bright blue, and slowly to pale yellow. Nitric acid gives a yellow solution; after heating, the solution contains *nitrocodeia*, $C_{18}H_{20}(NO_2)NO_3$, which is precipitated in yellow flakes by ammonia.

Preparation for Homœopathic Use.—The pure codeia is prepared by trituration, as directed under Class VII.

COFFEA.

Synonyms, *Coffea Arabica*, *Linn.* *Coffea Cruda*.

Nat. Ord., Rubiaceæ.

Common Name, Coffee.

This well-known, universally spread, and important article of trade requires no particular description. For medical use we select the sort sold under the surname Levantic (Mocha beans), consisting of small, more roundish than flat, not very dark, yellowish-gray-green beans, and having a peculiar, strong smell of coffee.

Preparation.—One part of the best unroasted coffee-beans is powdered in an iron mortar, moderately heated, and macerated eight days with six parts of strong alcohol, and then filtrated. The residuum is then boiled down in a glass retort with forty parts of distilled water, so far that the filtrate mixed with the alcoholic extract amounts to ten parts by weight.

Drug power of tincture, $\frac{1}{15}$.

Dilutions. This tincture is potentized according to Class IV, with regard to strength, but the 2x and 3x and 1 dilutions, must be prepared with dilute alcohol.

COLCHICUM.

Synonym, *Colchicum Autumnale*, *Linn.*

Nat. Ord., Melanthaceæ.

Common Names, Colchicum. Meadow Saffron. Naked Lady.

This perennial plant grows in many districts of Germany, France and the south of Europe, in meadows, where it flowers in autumn and announces the beginning of winter. The root forms a bulb of the size of a pigeon's egg, round on one side and flat on the other, and is furnished with fibrous radicles at its base; naturally it is covered with dark coats, of which the external one is brown, the inner shining and of a clear color; in the fresh state it contains a milky juice of an acrid taste, bitter and of a disagreeable odor. The flower rises in autumn immediately from a lateral bulb which the bulb of the preceding year has produced, and which has grown during the winter and spring; the flowers are rosy-colored, with long tubes, disappearing in a few days, and are followed by leaves only in the following spring; the leaves are large, flat, erect, spear-shaped, about five inches long and one inch broad at the base, and come off with the capsules, which are triangular, sessile, three-pointed; the seeds are round, ovoid, wrinkled, of a deep brown.

Preparation.—The fresh bulb, gathered shortly before coming into bloom, is chopped and pounded to a fine pulp, and pressed out *lege artis*, in a piece of new linen. The expressed juice is then, by brisk agitation, mingled with an equal part by weight of alcohol. This mixture is allowed to stand eight days in a well-stoppered bottle, in a dark, cool place, and then filtered.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class I.

COLLINSONIA.

Synonym, *Collinsonia Canadensis*, *Linn.*

Nat. Ord., Labiatae.

Common Names, Horse-Weed. Knot-Root. Stone-Root.

This is an indigenous plant, found growing in rich, moist woods, from Canada to Florida, and west to Michigan. Root perennial, knotty, depressed, very hard, with many slender fibres; stem smooth, simple, round, straight, one to three feet high; leaves serrate, with broad teeth, pointed, long petioled, only two or three pairs, these cordate at base, broadly ovate, acuminate, surface smooth, with small veins. Flowers opposite, on long peduncles, with short subulate bracteoles, forming a terminal leafless panicle with branched racemes. Corolla two-thirds of an inch long, yellow (exhaling a strong odor like lemons), tubular at base, spreading above in two lips, upper lip very short and notched, lower lip lobed on the sides and fringed around. Stamens two, long, protruding, filaments filiform, anther oval, style protruding. Seeds often abortive, only one ripening.

Preparation.—The fresh root, collected either in early spring or late autumn, is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and after thoroughly mixing the pulp with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, it is poured into a well-stoppered bottle, and allowed to stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{4}$.

Dilutions must be prepared as directed under Class III.

COLOCYNTHIS.

Synonyms, *Citrullus Colocynthis*, *Schrader*. *Cucumis Colocynthis*, *Linn*.

Nat. Ord., Cucurbitaceæ.

Common Names, Bitter Cucumber. Colocynth.

The *bitter cucumber* is an annual plant, bearing considerable resemblance to the common watermelon. The stems, which are herbaceous and beset with rough hairs, trail upon the ground, or rise upon neighboring bodies, to which they attach themselves by their numerous tendrils. The leaves, which stand alternately on long petioles, are triangular, many-cleft, variously sinuated, obtuse, hairy, of a fine green color on the upper surface, rough and pale on the under. The flowers are yellow, and appear singly at the axils of the leaves. The fruit is a globular pepo, of the size of a small orange, yellow and smooth when ripe, and contains, within a hard, coriaceous rind, a white spongy, medullary matter, enclosing numerous ovate, compressed, white or brownish seeds. The plant is a native of Turkey, and abounds in the islands of the Archipelago. It grows also in various parts of Africa and Asia.

Preparation.—The dried fruit, freed from the outer yellow rind and seeds, is pulverized finely and weighed. Then five parts by weight of alcohol are poured over it, and having been put into a well-stoppered bottle, it is allowed to remain eight days in a dark, cool place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{16}$.

Dilutions must be prepared as directed under Class IV.

COMOCLADIA DENTATA.

Synonym, Guao.

Nat. Ord., Anacardiaceæ.

Common Names, Bastard Brazil Wood. Tooth-leaved Maiden-plum.

This is a very common tree in the island of Cuba, where it is found growing near the coast, luxuriating mostly on barren or stony soils. It is from six to eight feet high, having beautiful dark green leaves, with a brownish border. The flowers are small, bluish-brown, and clustered like grapes. The trunk and branches contain a milky fluid that turns black on exposure to sunlight, discoloring the skin, linen, etc. A superstition is entertained that death results from sleeping in its shade.

Preparation.—The fresh bark is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one sixth part of it, the rest of the alcohol is added. After having stirred the whole well, and having

poured it into a well-stoppered bottle, it is allowed to stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Amount of drug power, $\frac{1}{8}$.

Dilutions must be prepared as directed under Class III.

CONDURANGO.

Nat. Ord., Asclepiadaceæ.

Common Name, Condor Plant.

This is a climbing plant or shrub, from ten to thirty feet high, found in Ecuador in localities from 3000 to 5000 feet above the level of the sea; it has a smooth, ash-gray bark, which is more or less mottled with greenish or blackish lichens. The bark is prepared for market by pounding the stem with a mallet to detach it, and then drying it in the sun, generally on skins, during eight or ten days. It forms quills and semi-cylindrical pieces, which are often much broken; has a yellowish-white liber, and in transverse section presents numerous minute yellowish points, which in longitudinal section are considerably elongated. When dry it is without odor; its taste is bitter and aromatic.

Preparation.—The dried bark, finely powdered, is covered with five parts by weight of alcohol, and allowed to remain eight days, in a well-stoppered bottle, in a dark, cool place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{16}$.

Dilutions must be prepared as directed under Class IV.

Triturations are prepared from the dried bark finely powdered, as directed under Class VII.

CONIUM.

Synonyms, Conium Maculatum, *Linn.* Coriandrum Cicuta.

Nat. Ord., Umbelliferae.

Common Name, Spotted Hemlock.

This is an umbelliferous plant, having a biennial spindle-shaped whitish root, and an herbaceous branching stem, from three to six feet high, round, hollow, smooth, shining, slightly striated, and marked with brownish-purple spots. The lower leaves are tripinnate, more than a foot in length, shining, and attached to the joints of the stem by sheathing petioles; the upper are smaller, bipinnate, and inserted at the division of the branches; both have channeled footstalks, and incised leaflets, which are deep green on their upper surface and paler beneath. The flowers are very small, white, and disposed in compound terminal umbels. The general involucre consists of from three to seven lanceolate, reflected leaflets, whitish at their edges; the partial involucre, of three or four, oval, pointed, spreading, and on one side only. There are five petals, cordate, with their points inflected, and nearly equal. The stamens are spreading, and about as long as the corolla; the styles diverging. The fruit, commonly called seeds, is roundish-ovate, a line and a half or rather less in length by a line in breadth,

striated, and composed of two plano-convex, easily separable parts, which have on their outer surface fine crenated ribs.

The plant is a native of Europe, growing usually in clusters along the roadsides, or in waste grounds, and is found most abundantly near old settlements.

Preparation.—The entire fresh plant, root excepted, gathered about the time the flowers begin to fade, is chopped and pounded to a fine pulp and pressed out *lege artis* in a piece of new linen. The expressed juice is then, by brisk agitation, mingled with an equal part by weight of alcohol. This mixture is allowed to stand eight days in a well-stoppered bottle, in a dark, cool place, and then filtered.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class I.

CONVOLVULUS.

Synonyms, *Convolvulus Arvensis, Linn.* *Convolvulus Scammoniae.*

Nat. Ord., Convolvulaceæ.

Common Names, Bindweed. Scammony.

This perennial is very common in Europe, Asia, Africa, and America, in fields, near the coast. Stem procumbent or twining, and low; leaves ovate-oblong, arrow-shaped, with the lobes at the base acute; peduncles mostly one-flowered; bracts minute, remote; corolla white or tinged with red, about nine lines long; calyx naked at the base; corolla open funnel-form or bell-shaped; stamens included; style one; stigmas two, elongated, linear, often revolute. Pod two-celled; the cells two-seeded. Flowers mostly opening at dawn.

Preparation—The fresh blooming plant, allowed to wither a little before manipulation, is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, pour it into a well-stoppered bottle, and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

CONVOLVULUS DUARTINUS, *Nobis.*

Synonyms, *Ipomœa Bona Nox, Linn.* *Calonyction Speciosum, De Candolle.*

Nat. Ord., Convolvulaceæ.

Common Name, Morning Glory.

This is a climbing plant cultivated in America and Europe. Its leaves are large, entire, cordate, alternate, on long petioles, generally arising from the axil of the flower-bearing branches. Calyx with five unequal folioles, the three outer ones sharp, the two inner ones oval and foliaceous. Corol white, large, expanding into a large circular limb. Stamens five, adhering by their filaments to the tube of the

corol which is shorter than the stamens. Anthers linear acuminate. The base of the ovary is surrounded by a glandular disk; style very long, filiform, terminated by a shaggy, bilobate stigma; fruit with a coriaceous tegument. There are two or three flowers on the flower-bearing pedicles; they resemble a trumpet in shape, whence their Brazilian name "herva trombetta."

Preparation.—The fresh flowers are pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, pour it into a well-stoppered bottle, and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

COPAIBA OFFICINALIS, Linn.

Synonyms, *Copaifera Glabra*. *Copaiva* off.

Nat. Ord., Leguminosæ.

Common Name, *Copaiba Balsam*.

This is an elegant tree, with a lofty stem, much branched at the top, and crowned by a thick canopy of foliage. The leaves are alternate, large, and pinnate, composed of from two to five pairs of ovate, entire, obtusely acuminate leaflets, two or three inches in length, rather narrower on one side than the other, smooth, pellucidly punctate, somewhat shining, and on short footstalks. The flowers are whitish, and in terminal branched spikes. The fruit is an oval, two-valved pod, containing a single seed. This species of *copaifera* is a native of Venezuela, and grows in the province of Carthagena, mingled with the trees which afford the balsam of Tolu. It grows also in some of the West India islands, particularly Trinidad and Martinique. The juice is obtained by making deep incisions into the stems of the trees; and the operation is said to be repeated several times in the same season. As it flows from the wound, it is clear, colorless, and very thin, but soon acquires a thicker consistence, and a yellowish tinge.

Preparation.—The balsam is dissolved in the proportion of one part by weight of the balsam, to fifty parts by weight of ninety-five per cent. alcohol, and designated mother tincture.

Drug power of tincture, $\frac{1}{100}$.

Dilutions must be prepared as directed under Class VI— β .

COPTIS.

Synonyms, *Coptis Trifolia*, *Salisbury*. *Helleborus Trifolius*, Linn.

Nat. Ord., Ranunculacæ.

Common Name, Gold-Thread.

This plant is indigenous to the northern half of this continent from Pennsylvania northward to Greenland, Labrador, and also from the northern portion of Europe and Siberia to Kamschatka.

This little evergreen has a perennial creeping root, the slenderness

and bright yellow color of which have given rise to the common name of *goldthread*, from which the petioles and flower-stems proceed; is invested with ovate, acuminate, yellowish, imbricated scales. The leaves, which stand on long, slender footstalks, are ternate, with firm, rounded or obovate, sessile leaflets, having an acute base, a lobed and acuminately crenate margin, and a smooth, veined surface. The flower-stem is slender, round, rather longer than the leaves, and surmounted by one small white flower, with a minute mucronate bract beneath it. The petals are oblong, concave, and white; the nectaries inversely conical, hollow, and yellow at the top. The stamens have capillary filaments and globose anthers. The germs are from five to eight, stipitate, oblong, compressed, and support short recurved styles, with acute stigmas. The capsules, which diverge in a star-like form, are pedicelled, compressed, beaked, and contain numerous black seeds attached to the inner side. The whole plant is glabrous, without odor, and has a strongly bitter taste. Flowers appear in May.

Preparation.—The fresh root is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one sixth part of it, the rest of the alcohol is added. After having stirred the whole well, pour it into a well-stoppered bottle, and let it stand eight days, in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{4}$.

Dilutions must be prepared as directed under Class III.

CORALLIUM RUBRUM.

Synonyms, *Corallium Rubrum*, *Lamarck*. *Gorgonia Nobilis*. *Isis Nobilis*, *Linn*.

Class, Polypi.

Order, Alcyonaria.

Family, Corallina.

Common Name, Red Coral.

Red coral is the calcareous covering of certain polypi which inhabit the Mediterranean, especially on the coast of Africa and in the Greek Archipelago, where they stick fast, by a broad, disk-shaped foot, to the submarine rocks. By their form and structure, corals resemble a bush, deprived of its leaves, or else they form, by the agglomeration of a great many individuals, a kind of rock of great extent. The trunk is rounded or a little compressed, of the thickness of an inch or more at its base, furnished irregularly with lateral branches, each one of which terminates in a rounded knot or bow; this knot is the true living part of the polypus, and is covered with a soft marrowy pellicle which is inhabited by numerous threadlike zoophytes. On raising this pellicle or cover we find the stony, cellular axis, consisting of concentric layers, successively deposited by these animals.

The coral is torn off the rocks by the fishermen and divers, and caught in peculiar nets and other contrivances.

Preparation.—For homœopathic use the small, brancy, striated

pieces, which often have a white calcareous covering, are reduced to a subtle powder, and triturated as directed under Class VII.

CORALLORHIZA ODONTORHIZA, *Nuttall*.

Synonym, *Corallorhiza Wistariana*, *Conrad*.

Nat. Ord., Orchidaceæ.

Common Name, Coral Root.

This plant is a parasite, of a light brown or purplish color; stem rather slender, bulbous-thickened at the base, and from six to sixteen inches high, and bears from six to twenty flowers; pedicels rather slender; lip entire, or merely denticulate, thin, broadly ovate or ob-ovate, abruptly contracted into a claw-like base, the lamellæ a pair of short projections; the spur represented by a small cavity wholly ad-nate to the summit of the ovary; pod at first very acute at the base, at length short-oval, about four lines long. Perianth about three lines long. Flowers small, lip whitish or purplish, often mottled with crimson, appear from May to July. The plant is found in rich woods, from New York to Michigan, and especially southward; more rarely northward.

Preparation.—The fresh root is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having mixed the whole well together, pour it into a well-stoppered bottle, and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Amount of drug power, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

CORNUS CIRCINATA, *L'Heritier*.

Synonyms, *Cornus Rugosa*. *Cornus Tomentulosa*.

Nat. Ord., Cornaceæ.

Common Names, *Cornea*. Green Osier. Round-Leaved Dog-wood. Swamp Sassafras.

This is a shrub six to ten feet high, with warty branches, large, roundish, pointed leaves, waved on their edges and downy beneath, and white flowers disposed in depressed cymes. The fruit is blue. The plant is a native of the United States, extending from Canada to Virginia, and growing on hillsides and the banks of rivers. It flowers in June and July.

Preparation.—The fresh bark is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and after mixing the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, pour it into a well-stoppered bottle, and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

CORNUS FLORIDA, Linn.**Synonym,** *Benthamedia Florida*.**Nat. Ord.,** *Cornaceæ*.**Common Name,** American Boxwood. Flowering Dogwood. New England Boxwood.

This is a small indigenous tree, usually about fifteen or twenty feet in height, though sometimes as tall as thirty or thirty-five feet. It is of short growth; and the stem, which generally attains a diameter of four or five inches, is compact, and covered with a brownish bark, the epidermis of which is minutely divided by numerous superficial cracks or fissures. The branches are spreading and regularly disposed, sometimes opposite, sometimes in fours nearly in the form of crosses. The leaves are opposite, oval, about three inches long, pointed, dark green and sulcated on the upper surface, glaucous or whitish beneath, and marked with strong parallel veins. Towards the close of summer they are speckled with black spots, and on the approach of cold weather become red. The proper flowers are small, yellowish, and collected in heads, which are surrounded by a large conspicuous involucre, consisting of four white obcordate leaves, having the notch at their summit tinged with red or purple. This involucre constitutes the chief beauty of the tree when in flower. The calyx is four-toothed, and the corolla composed of four obtuse reflexed petals. The fruit is an oval drupe, of a vivid glossy redness, containing a two-celled and two-seeded nucleus. The drupes are usually associated together to the number of three or four, and remain on the tree till after the early frosts. They ripen in September.

Preparation.—The fresh bark is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and after mixing the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, pour it into a well-stoppered bottle, and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{4}$.

Dilutions must be prepared as directed under Class III.

CORNUS SERICEA, L'Heritier.**Synonyms,** *Cornus Alba*. *Cornus Cœrulea*. *Cornus Cyano-carpus*.**Nat. Ord.,** *Cornaceæ*.**Common Names,** Blue-Berried Cornus. Female Dogwood. Swamp Dogwood.

This species of cornus is usually six or eight feet in height, with numerous erect stems, which are covered with a shining reddish bark, and send out opposite spreading branches. The young shoots are more or less pubescent. The leaves are opposite, petiolate, ovate, pointed, entire, and on the under surface covered with soft brownish hairs. The flowers are small, white, and disposed in terminal cymes, which are depressed and woolly. The fruit consists of globular, berry-formed

drupes, of a cerulean blue color, and collected in bunches. It inhabits the United States from Canada to Carolina, and is found in moist woods, in swamps, and on the borders of streams. It flowers in June and July.

Preparation.—The fresh bark is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and after mixing the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, pour it into a well-stoppered bottle, and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

CORYDALIS FORMOSA, *Pursh.*

Synonym, *Dicentra Eximia, De Candolle.* Dielytra.

Nat. Ord., Fumariaceæ.

Common Names, Fumitory. Squirrel Corn. Stagger Weed. Turkey Pea.

This is a native of the United States, growing in rocky sections in Western New York and on the Alleghanies of Virginia. Subterranean shoots scaly; divisions and lobes of the leaves broadly oblong; raceme compound, clustered; corolla oblong, two-saccate at the base; crest of the inner petals projecting. The purplish flowers appear from May to August.

Preparation.—The fresh root is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, pour it into a well-stoppered bottle, and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Amount of drug power, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

COSMOLIN.

Common Name, Cosmoline.

Under this name has been introduced a proprietary substance which, from its extreme blandness and from its favorable consistence has gained general favor as an application in inflammations of the skin.

It is a dense, neutral, concentrated oleaginous body, obtained by subjecting crude petroleum to distillation for the purpose of expelling the light hydro-carbons. The residue is purified without the use of chemicals, and deodorized by animal charcoal. It consists essentially of paraffin and some of the heavy coal oils.

Preparation for Internal Use.—Cosmoline is prepared by trituration, as directed under Class IX.

COTYLEDON.

Synonyms, *Cotyledon Umbilicus*, Linn. *Umbilicus Pendulinus*, De Candolle.

Nat. Ord., Crassulacæ.

Common Names, Kidney wort. Navel wort. Penny wort.

This is a perennial herb of southern and western Europe, growing on rocks and old walls. It has a fleshy tuberous root, and an erect stem about six inches high. The leaves are smooth, fleshy, peltate, concave, roundish, and repand-crenate, about an inch broad, the upper ones smaller, roundish, wedge-shaped, and on shorter petioles. The numerous small flowers are greenish-yellow and tubular, bell-shaped, with a five-parted corolla, ten stamens, and five many-ovuled ovaries.

Preparation.—The fresh leaves are chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, pour it into a well-stoppered bottle, and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{4}$.

Dilutions must be prepared as directed under Class III.

CROCUS.

Synonyms, *Crocus Sativus*, Linn. *Crocus Autumnalis*. *Crocus Hispanicus*.

Nat. Ord., Iridacæ.

Common Name, Saffron.

The common saffron is a perennial plant, with a rounded and depressed bulb or cormus, from which the flower rises a little above the ground, upon a long, slender, white and succulent tube. The flower is large, of a beautiful lilac or bluish-purple color, and appears in September or October. The leaves are radical, linear, slightly revolute, dark green upon their upper surface with a white longitudinal furrow in the centre, paler underneath with a prominent flattened midrib, and enclosed at their base, together with the tube of the corolla, in a membranous sheath, from which they emerge soon after the appearance of the flower. The style hangs out on one side between the two segments of the corolla, and terminates in three long convoluted stigmas, which are of a rich orange color, highly odorous, rolled in at the edges, and notched at the summit. These stigmas are the officinal part of the plant. The plant is a native of Greece and Asia Minor, but is also cultivated in many parts of Europe.

Preparation.—The dried stigmas of the flowers are pulverized and weighed, and then covered with five parts by weight of alcohol. After having poured this into a well-stoppered bottle, let it remain eight days in a dark, cool place, shaking it twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{16}$.

Dilutions must be prepared as directed under Class IV.

CROTALUS CASCABELLA.

Class, Reptilia.

Order, Ophidia.

Family, Crotalidæ.

Common Name, Brazilian Rattlesnake.

This terrible serpent is found in the Province of Ceara. This species generally attains a length of from four to five feet, but the animal from which the poison was taken for the provings, was three feet long. Its oval-triangular head, one-half of which is provided with shields, shows a round depression in front of the eyes, which are covered with a large elliptical shield, serving as a lid. The body is big, conical; its movements are sluggish; its upper surface is covered with scales, the dorsal scales being keeled and somewhat lanceolate, the scales of the tail being quadrangular and smaller. The belly is provided with one-hundred and seventy large transversal plates; there are twenty-five plates belonging to the tail, the first three of which are divided in shields. The extremity of the tail is furnished with seven or eight capsules of the consistence of parchment, which, when agitated, produce a shrill sound. The color of the crotalus is a yellowish-brown, much lighter under the belly, with twenty-six regular long rhomboidal lines on each side of the back. When irritated and during the excessive heat, the crotalus spreads a very fetid musk-like odor. The molar teeth which are few in number, but long and excessively poisonous, are inserted in exceedingly dilatable jaws. The poison of this reptile acts with a frightful intensity, and it was not without great danger that Drs. Mure and Martins succeeded in obtaining a few drops of it.

Preparation.—The poison, obtained by compressing the secreting gland of the living animal is triturated as directed under Class VIII.

CROTALUS HORRIDUS, Linn.

Synonym, Crotalus Durissus.

Order, Ophidia.

Family, Crotalidæ.

Common Name, Rattlesnake.

This poisonous serpent is frequently found in the mountainous and adjacent regions of the Northern and Southern States. It attains a length of from four to six feet, gradually swelling towards the middle, where it is from five to eight inches in circumference; back and sides covered with keeled scales; belly with unkeeled scales, which are always single under the tail. Head broad and triangular, with a large pit on each side below and in front of the eye; fangs one-half to one inch long; the tail has seven or eight capsules of the consistency of parchment, which when agitated produce a shrill rattle. Ground color of back varies from yellowish-tawney to brownish-grey. A central and two lateral rows of dark spots along the back, confluent on posterior half of body. Tail generally black.

The provings were made from triturations of the venom with sugar of milk and from dilutions prepared from them.

The venom of this deadly snake is obtained by pressing the poison gland situated between the ear and eye, whilst the serpent is either pinioned or chloroformed, and as the venom drops from the fang it is received on pulverized sugar of milk, with which it is triturated, in proportion of one to ninety-nine. Dilutions are made as usual from the third trituration.

Of late the preservation and potentiation of the venom in glycerine has been recommended, but we fail to see any valid reason for departing from Hering's mode of preparing the poison by trituration especially as the first provings (1837) were made from such a preparation.

The writer assisted in procuring the virus from three rattlesnakes at Dr. Hering's house in Philadelphia in 1864. The snakes (obtained from the "Blue Ridge" in Pennsylvania) were first chloroformed, then decapitated, and after the subsequent convulsive muscular movements had ceased, the fangs were tied with a string so as to protrude from the upper jaw, and by pressing on the poison bags, fifty-six drops of the honey-like poison were obtained from the largest, and thirty-six and twenty-eight drops respectively from the other smaller snakes. Part of the poison was dropped in sugar of milk to be triturated, and part on a watch glass and dried, for future use. When dried it resembles dried white of egg; the dried venom retains its poisonous properties for an indefinite time.

Preparation.—The poison obtained as explained above is triturated as directed under Class VIII.

CROTON TIGLIUM, Linn.

Synonyms, Croton Jamalgota. Grana Tiglii. Tiglium officinale. Nat. Ord., Euphorbiaceæ.

Common Names, Croton Oil. Croton Tree. Purging Nut.

This species of croton is a small tree or shrub, with a few spreading branches, bearing alternate petiolate leaves, which are ovate, acuminate, serrate, smooth, of a dark green color on the upper surface, paler beneath, and furnished with two glands at the base. The flowers are in erect terminal racemes, scarcely as long as the leaf; the lower being female, the upper male, with straw-colored petals. The fruit is a smooth capsule, about the size of a filbert, with three cells, each containing a single seed; these seeds are rather larger than a grain of coffee, oblong, rounded at the extremities, with two faces, the external considerably more convex than the internal, separated from each other by longitudinal ridges, and each divided by a similar longitudinal ridge, so that the whole seed presents an irregular quadrangular figure. The shell is covered with a soft, yellowish-brown epidermis, beneath which the surface is black and smooth; and, as the epidermis is often partially removed by friction during their carriage, the seeds as they come to us are frequently mottled, and sometimes nearly black. The kernel or nucleus is yellowish-brown and abounds in oil.

Preparation.—The dried seeds are finely powdered and covered with five parts by weight of alcohol. After mixing well, pour into a well-stoppered bottle, and let it remain eight days in a dark, cool

place, shaking it twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{16}$.

Dilutions must be prepared as directed under Class IV.

CUBEBA.

Synonyms, Piper Cubeba, *Linn.* Cubeba Officinalis, *Miquel*.

Nat. Ord., Piperacæ.

Common Names, Cubeb pepper. Cubebs.

This is a climbing perennial plant, with a smooth, flexuous, jointed stem, and entire, petiolate, oblong or ovate-oblong, acuminate leaves, rounded or obliquely cordate at the base, strongly nerved, coriaceous, and very smooth. The flowers are diœcious and in spikes, with peduncles about as long as the petioles. The fruit is a globose, pedicelled berry, which is acrid, peppery, and camphoraceous in taste, of aromatic and pleasant odor. This species of Piper is a native of Java, Penang, and probably other parts of the East Indies. It grows wild in the woods, and does not appear to be cultivated.

Preparation —The dried berries are finely powdered and covered with five parts by weight of alcohol. After mixing well, pour it into a well-stoppered bottle, and let it remain eight days in a dark, cool place, shaking it twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{16}$.

Dilutions must be prepared as directed under Class IV.

CUCURBITA PEPO, *Linn.*

Nat. Ord., Cucurbitacæ.

Common Name, Pumpkin.

This plant is an annual, a native of the Levant, but long cultivated as a useful kitchen vegetable or for cattle. The plant is hispid and scabrous; stem procumbent; tendrils branched; leaves, which are very large, are cordate, palmately five-lobed or angled, denticulate; flowers large, yellow, axillary, long-pedunculate; fruit very large, sometimes three feet in diameter, roundish or oblong, smooth, furrowed and torulose, yellow when mature. Flowers appear in July.

Preparation. —The fresh stems are pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, pour it into a well-stoppered bottle, and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Amount of drug power, $\frac{1}{4}$.

Dilutions must be prepared as directed under Class III.

CUPRUM.

Synonym, Cuprum Metallicum.

Common Name, Copper.

Symbol, Cu.

Atomic Weight, 63.5.

Origin of Copper.—Copper is often found in the metallic state as native copper, notably near Lake Superior; occasionally it is met with in the oxidized state as black and red copper ore, or as a carbonate in malachite, and frequently as sulphuret in copper pyrites, copper glance, and gray copper ore, etc. It is a natural constituent in minute quantities of some mineral springs, and of many vegetable and animal organisms. The smelting process is rather complicated for many ores, and depends mainly upon the oxidation of the sulphurets by roasting and the reduction of the metal by means of charcoal or by fusing a mixture of oxide and sulphide of copper. Arsenic and antimony, which are often present, are expelled by the repeated roastings, together with the sulphur, and the iron is made to enter the slag.

Properties.—Copper is a very sonorous, malleable, and ductile metal of a reddish color, having the specific gravity 8.92, or when hammered 8.95. It is inferior to iron in tenacity or strength and hardness, and it fuses at a lower temperature; but it is a much better conductor of electricity and heat, and resists the chemical action of moist air much better than iron. It is not acted upon by cold concentrated or hot dilute sulphuric acid, but it dissolves readily in nitric acid.

Cuprum Præcipitatum. Precipitated Copper.—One part of purified sulphate of copper is dissolved in about thirty parts of distilled water; the solution is poured into a large shallow porcelain dish, and then several small iron bars about $\frac{1}{4}$ inch thick, free from rust, are put in. The decomposition will ensue immediately, some copper being precipitated first as a smooth covering, afterwards as a very fine powder, upon the surface of the iron. To get this powder as fine as possible, it is necessary not to leave the deposition to itself, but to separate the precipitate by scraping it off the bars with a wooden spatula; the precipitate then falls down and makes room for other deposits. As soon as the decomposition is finished (care is to be taken, not to use any of the solution till all the copper is precipitated, or else the precipitate may easily become adulterated with iron), the solution, now converted into a solution of sulphate of iron, is to be poured off, the precipitate obtained is washed repeatedly with distilled water, till this flows off quite pure. Now it is put in a glass, that can be closed tightly, covered with a watery solution of hyposulphite of soda, and agitated for five to ten minutes; the precipitate obtains by this the true red-brown copper-color, the dark brown suboxide becoming reduced. After having removed this solution also by carefully repeated washings, the precipitate is collected upon a filter and freed from the adherent moisture by slightly pressing it between several layers of bibulous paper, of which new ones are often to be used; afterwards it is washed repeatedly with strong alcohol and completely dried by triturating it in a well-warmed porcelain mortar. Thus prepared it is a

tender lustreless powder, of a copper-brown or light chocolate-brown color, which, under the burnishing steel, immediately exhibits the finest metallic splendor.

Preparation for Homœopathic Use.—The precipitated metal is prepared by trituration, as directed under Class VII.

CUPRUM ACETICUM.

Synonyms, Cupric Acetate. Cupri Acetas. Ærugo Destillata.

Common Names, Acetate of Copper. Verdigris.

Formula, $\text{Cu } 2\text{C}_2\text{H}_3\text{O}_2 \cdot \text{H}_2\text{O}$.

Molecular Weight, 199.5.

Preparation of Acetate of Copper.—Dissolve verdigris (*cupri subacetis*) in diluted acetic acid, evaporate gently, and allow to crystallize.

Properties and Tests.—Acetate of copper is in oblique rhombic prisms of a deep blue-green color, soluble in about fourteen parts of cold water, and in alcohol containing some acetic acid; the aqueous solution, on boiling, evolves acetic acid and deposits a basic salt. The crystals blacken when heated on a knife or slip of glass, and emit the odor of vinegar. The blue solution gives a black precipitate with sulphuretted hydrogen, and a pale blue precipitate with ammonia, being re-dissolved into a deep blue solution by an excess of the ammonia.

Preparation for Homœopathic Use.—The pure acetate of copper is prepared by trituration, as directed under Class VII.

Tinctura Cupri Acetici Rademacheri.—Rademacher's tincture of acetate of copper is prepared by dissolving one part of crystallized acetate of copper in ten parts of warm water and adding eight parts of alcohol. Eighteen parts of the tincture with eighty-two parts of dilute alcohol will yield the 2x dilution.

Further dilutions must be prepared as directed under Class V— β .

CUPRUM AMMONIATUM.

Synonyms, Cuprum Sulphuricum Ammoniatum. Ammonio-Sulphate of Copper.

Common Name, Ammoniated Copper.

Formula, $\text{Cu } (\text{NH}_3)_4 \text{SO}_4 \cdot \text{H}_2\text{O}$.

Molecular Weight, 245.5.

Preparation of Ammoniated Copper.—Take of sulphate of copper half a troy ounce, carbonate of ammonium three hundred and sixty grains. Rub them together in a glass mortar, until effervescence ceases. Then wrap the ammoniated copper in bibulous paper, dry it with a gentle heat, and keep it in a well-stoppered bottle.

Properties and Tests.—The salt has a deep blue color, and an ammoniacal odor; exposed to the air, it loses ammonia, and gradually changes to light blue. It dissolves in one and a half parts of cold water; the solution has an alkaline reaction and metallic taste, and on the addition of more water becomes turbid, and produces a sediment.

With a solution of arsenious acid, a green precipitate, Scheele's green, is produced. When the salt is heated to 150° C. (302° F.), ammonia and water are given off, and an apple-green powder remains, having the composition $\text{Cu}(\text{NH}_3)_2\text{SO}_4$, being a cuprodiammonium sulphate, while the officinal salt is a cuprotetramonium sulphate; this contains 27.10 per cent of ammonia and 32.38 oxide of copper. Berzelius obtained 26.40 and 34.0 per cent.

Preparation for Homœopathic Use.—The pure ammoniated copper is prepared by trituration, as directed under Class VII.

CUPRUM ARSENICOSUM.

Synonyms, Arsenious Oxide of Copper. Arsenite of Copper. Cuprum Oxydatum Arsenicosum. Hydric Cupric Arsenite.

Common Name, Scheele's Green.

Formula, Cu H As O_3 .

Preparation of Arsenite of Copper.—Boil three parts of pulverized white arsenic (arsenious acid) with eight parts of caustic potash in sixteen parts of water, until the arsenic is deposited in the shape of a powder. Pour this liquid into a hot solution of eight parts of the sulphate of copper in forty-eight parts of water, stirring the mixture all the time; wash the precipitate well, and dry it at a moderate temperature. It is a bright, yellowish-green, insoluble powder.

Preparation for Homœopathic Use.—The pure arsenite of copper is prepared by trituration, as directed under Class VII.

CUPRUM CARBONICUM.

Synonyms, Cupri Carbonas. Hydrated-dibasic Cupric Carbonate.

Common Name, Carbonate of Copper.

Formula, $\text{Cu O. 2 H}_2\text{O. Cu C O}_3$.

Preparation of Carbonate of Copper.—This salt exists in nature in the form of blue carbonate (malachite), and anhydrous carbonate. It is also obtained by precipitating a solution of sulphate of copper with a solution of carbonate of soda. The precipitate is collected and washed with cold distilled water. This salt is of a magnificent blue color.

Preparation for Homœopathic Use.—The pure carbonate of copper is prepared by trituration, as directed under Class VII.

CUPRUM SULPHURICUM.

Synonyms, Cupri Sulphas. Cupric Sulphate. Cuprum Vitriolatum.

Common Names, Sulphate of Copper. Blue Vitriol. Blue-stone.

Formula, $\text{Cu SO}_4. 5 \text{ H}_2\text{O}$.

Molecular Weight, 249.5.

Preparation of Sulphate of Copper.—It is obtained on a large scale from the native (*copper pyrites*) or artificially prepared sulphide by converting it through oxidation into the sulphate; for this purpose

the sulphide is obtained by heating sheet copper to redness and throwing sulphur upon it. The water accumulating in copper mines contains the sulphate in solution, formed by the oxidation of the native sulphide. The iron contained in this is removed either by digesting with oxide or carbonate of copper, or by evaporating to dryness and heating until the iron is decomposed. The same salt is also formed in the preparation of sulphurous acid from copper and hot oil of vitriol, and in the extraction or purification of silver, by precipitating this metal from its sulphuric acid solution by means of copper; also by dissolving the black scales obtained in coppersmithing in weak sulphuric acid (chamber acid). 190,657 pounds of sulphate of copper were imported into the United States in 1876-1877, and 65,400 pounds the following year.

Purification.—Sulphate of copper cannot by crystallization be separated from the sulphates of the allied and of the alkaline metals, owing to the formation of double salts. If iron alone is present, it may be conveniently removed by oxidizing with nitric acid and digesting the solution with barium carbonate; ferric hydrate and barium sulphate will be precipitated with the excess of the carbonate, and the filtrate will yield pure crystals. If contaminated with other metals its purification will be difficult, and it is more convenient to prepare the salt directly by heating three parts of copper with ten parts of sulphuric acid; or with five parts of sulphuric acid, fifty of water, and four or five of nitric acid.

Properties and Tests.—Sulphate of copper crystallizes in handsome blue oblique prisms, which yield a whitish-blue powder, and, when heated, part with their water of crystallization, amounting to thirty-six per cent., leaving a whitish, friable mass of the anhydrous salt, which, in a damp atmosphere, again combines with water and becomes blue and crystalline. The crystals are insoluble in alcohol, but dissolve in three parts of cold and about one-half their weight of boiling water. The solution has a pale blue color, a strong acid reaction, and a very styptic metallic taste. It yields a white precipitate with barium chloride (sulphuric acid), and a blue one with ammonia water, soluble in excess of the latter. For detecting a small quantity of ferrous salt it should be oxidized by chlorine. If now ammonia water be added in excess, all the iron will precipitate as ferric hydrate, while the copper will form a deep blue solution. The presence of zinc, earthy, or alkaline sulphates is most conveniently detected by precipitating the solution completely with sulphuretted hydrogen gas and evaporating the filtrate to dryness, when, in case a residue should have been left, its nature may be ascertained by the appropriate tests.

Though the ordinary bluestone of commerce is sometimes quite impure, there is no difficulty in finding in our market very good and pure sulphate of copper.

Preparation for Homœopathic Use.—The pure sulphate of copper is prepared by trituration, as directed under Class VII.

CURARE.

Synonyms, Urari. Woorari. Wourari. Wourali. Woorara.

Origin and Preparation of Curare.—The latest information concerning the preparation of this South American arrow-poison is from Dr. Jobert (1878), who, writing from Belin de Para to the French Academy, made the following statements: The principal ingredients are *urarin va* (probably *Strychnos Castelnæ*) and *eko*, also called *pani du maherdo* (probably *Cocculus Toxiferus*). The young bark of these plants is well scraped, and the scrapings are mixed in the proportion of four parts of the former to one part of the latter; the mixture is well kneaded with the hands, and, in a funnel made of a palm leaf, exhausted with cold water, the liquid being returned seven or eight times. The red infusion is boiled with fragments of *toja* (an aroidæ) and *mucura-ca-ha* or *cone* (probably *Didelphys Cancrivora*). After about six hours the liquid has acquired a thick consistence, and is mixed with the scrapings of three species of pepper (*Artanthe?*) and *taumagere*, and again boiled and allowed to cool, when it will have the consistence of a thick paste.

It is, however, very probable that in different parts of South America it is prepared from different plants. Indeed, it has been stated that the *curare* of Guiana, which is always met with in small earthen jars, is obtained from *Rouhamon Guianensis*, *Aublet*, and *Strychnos Cogens*, *Bentham*, and that the *urati* consists chiefly of the extract of *Strychnos Toxifera*, *Schomburgh*, and is always preserved in calabashes. *Paullinia Cururu*, *Linn.*, has likewise been named as one of the ingredients.

Properties.—Curare is a blackish-brown extract, brittle or hygroscopic, of a very bitter taste, and generally almost completely soluble in water.

Preparation for Homœopathic Use.—Curare is prepared by trituration, as directed under Class VII.

CYCLAMEN.

Synonyms, Cyclamen Europæum, *Linn.* Artanita Cyclamen.

Nat. Ord., Primulacæ.

Common Name, Sow-bread.

This is an herbaceous perennial stemless plant, indigenous in the south of Europe; it is also cultivated in gardens for the beauty of its flowers. The root is globular, with many branched fibres, almost black without, and white within, inodorous, and when fresh, of a bitter, acid, burning taste. It brings forth directly its long-petiolate, roundish, veined leaves, shining dark green, white spotted above, purple or rosy below, as well as the uniflorous flower-scapes with pendulous rose-colored (or white), sweet scented flowers, without a stem; corolla revolute; berries covered with a capsule.

Preparation.—The fresh root, gathered in autumn, is chopped and pounded to a pulp, and pressed out *lege artis* in a piece of new linen. The expressed juice is then, by brisk agitation, mingled with an equal part by weight of alcohol. This mixture is allowed to stand eight days in a dark, cool place, and then filtered.

Drug power of tincture, $\frac{1}{4}$.

Dilutions must be prepared as directed under Class I.

CYPRINUS BARBUS.

Synonyms, Barbus Fluvialis. Ova Barbæ.

Class, Pisces.

Order, Physostomi.

Family, Cyprinoidei.

Common Names, Common Barb or Barbel. Carp.

The fish lives in the clear running waters of Asia and the south of Europe, and is frequently caught in those of France. It is distinguished by the four feelers on the upper jaw to which it owes its name. The body is commonly covered with a viscous mucus; its flesh is white, tender, and tastes the more agreeably the older the fish is, but is of difficult digestion to weak stomachs. The eggs are considered poisonous, and contain an acrid and bitter substance.

Preparation.—The roe, collected in the month of May, from a large adult barbel, is prepared by trituration, as directed under Class IX.

Tincture may be prepared from the fresh roe, gathered in May, from a large adult barbel, which, being crushed and covered with five parts by weight of alcohol, is allowed to remain eight days in a well-stoppered bottle, in a dark, cool place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{16}$.

Dilutions from tincture must be prepared as directed under Class IV.

CYPRIPEDIUM.

Synonym, Cypripedium Pubescens, Willd.

Nat. Ord., Orchidaceæ.

Common Names, Lady's Slipper. Moccasin Plant.

The *yellow lady's slipper*, as this plant is called from the color of its flowers, has a simple, often flexuous, pubescent, leafy stem, from one to two feet high. The leaves are pubescent, ovate-lanceolate, acuminate, narrowing at the base, about four or five inches long by two in breadth, alternate, sessile, and sheathing. The flower is usually solitary and terminal; with four divisions of the perianth, the two outer cohering nearly to the apex, the inner longer, narrower, undulatory or twisted, and the lip an inch or two in length, swelling sac-like, and of a yellow color. The fruit is an oblong capsule, tapering at each end, recurved, pubescent, and peduncled. The plant is indigenous, growing abundantly in rich moist woods throughout the United States.

Preparation.—The fresh root, gathered in autumn, is chopped and pounded to a fine pulp and weighed. Then two parts by weight of alcohol are taken, and after mixing the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, pour it into a well-stoppered bottle, and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{4}$.

Dilutions must be prepared as directed under Class III.

DAMIANA.

Synonyms, *Turnera Microphylla*, *De Candolle*. *Turnera Aphrodisiaca*, *Ward*.

Nat. Ord., Turneraceæ.

Common Name, Damiana.

This plant belongs to western North America and parts of South America. The leaves are alternate, obovate, entire at the base, and above on each side have three or four teeth; are light green, rather rough, and covered with short whitish hairs. They readily fall off, and the much-branched stems, if present, have some resemblance to broom tops. The leaves have an aromatic taste. *Turnera aphrodisiaca*, *Ward*, is the name given to the plant in allusion to its asserted properties.

Preparation.—The recently dried leaves, finely powdered, are covered with five parts by weight of alcohol. Having poured it into a well-stoppered bottle, let it remain eight days in a dark, cool place, shaking it twice a day. The tincture is then poured off, strained and filtered.

Amount of drug power, $\frac{1}{16}$.

Dilutions must be prepared as directed under Class IV.

DAPHNE.

Synonyms, *Daphne Indica*. *Daphne Lagetta*. *Daphne Odora*. *Lagetta Lintearea*, *Lamarck*.

Nat. Ord., Thymelacææ.

Common Name, Sweet-scented Spurge-Laurel.

This moderately-sized branching shrub is a native of the West Indies and China. Leaves are alternate, ovate-cordate, glabrous. Flowers are white, richly scented, in terminal bunches of ten to fifteen, almost sessile flowers on a common peduncle, furnished with several bracts at its base.

Preparation.—The fresh bark is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, pour it into a well-stoppered bottle, and let it stand eight days, in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Amount of drug power, $\frac{1}{4}$.

Dilutions must be prepared as directed under Class III.

DATURA ARBOREA.

Synonym, *Burgmansia Gardneri*.

Nat. Ord., Solanacææ.

Common Name, Tree Stramonium.

This is a native of Peru and the coast of California. The flowers

are long, tubular, bent downward, snowy-white, and of a very sweet odor.

Preparation.—The fresh flowers are chopped and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, pour it into a well-stoppered bottle, and let it stand two weeks in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Amount of drug power, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

DELPHINUS AMAZONICUS.

Synonym, Delphinus Geoffroyi.

Class, Mammalia.

Order, Cetacea.

Family, Delphinida.

Common Name, Amazonian Dolphin.

This dolphin is from nine to ten feet long; its body is large and cylindrical, of a brownish-gray color above and pure white below. Its jaws, of equal length, are long, narrow, linear, armed on each side with twenty-six large, conical, somewhat rugose teeth, with wide crowns. Its forehead is bomb-shaped, the eyes a little above the commissure of the lips. The pectoral fins are of considerable size, brownish at their extremities, and placed very low; the dorsal fin is elevated and semilunar. This dolphin, as its name shows, inhabits the mouth of the Amazon. It has a thick and fibrous skin, which we employ in medicine.

Preparation.—The fresh skin is prepared by trituration, as directed under Class IX.

DICTAMNUS.

Synonym, Dictamnus Albus, Linn.

Nat. Ord., Rutaceæ.

Common Names, White or Bastard Dittany. Fraxinella.

This perennial plant grows in the south of Germany, in Italy, France, Russia, in mountain woods, and on stony hills. Root elongated, of the thickness of a finger, branchy, succulent, somewhat spongy; stem upright, from two to three feet high, slightly angular, streaked green, furnished with red, resinous glands, and terminating in a beautiful spike; leaves alternate, shining, pinnated; flowers terminal, in spikes, of a snowy-white or a clear red, with stripes of a deeper color; seeds ovoid, black. When fresh, the whole plant emits a strong, resinous odor, and exhales a quantity of ethereal oil, which, upon a candle being approached in a dry and hot air, inflames without any injury being done to the plant.

Preparation.—The fresh rootlets and the bark only of the larger roots are chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp

thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, pour it into a well-stoppered bottle, and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

DIGITALIS.

Synonyms, *Digitalis Purpurea*, *Linn.* *Campanula Sylvestris*.

Nat. Ord., Scrophulariaceæ.

Common Names, Foxglove. Fairy Fingers. Purple Glove.

The *foxglove* is a beautiful plant, with a biennial or perennial fibrous root, which in the first year sends forth large tufted leaves, and in the following summer, a single erect, downy, and leafy stem, rising from two to five feet, and terminating in an elegant spike of purple flowers. The lower leaves are ovate, pointed, about eight inches in length and three in breadth, and stand upon short, winged footstalks; the upper are alternate, sparse, and lanceolate; both are obtusely serrate, and have wrinkled velvety surfaces, of which the upper is of a fine deep green, the under paler and more downy. The flowers are numerous, and attached to the upper part of the stem by short peduncles, in such a manner as generally to hang down upon one side. At the base of each peduncle is a floral leaf, which is sessile, ovate, and pointed. The calyx is divided into five segments, of which the uppermost is narrower than the others. The corolla is monopetalous, bell-form, swelling on the lower side, irregularly divided at the margin into short obtuse lobes, and in shape and size not unlike the end of the finger of a glove, a circumstance which has suggested most of the names by which the plant is designated in different languages. Its mouth is guarded by long soft hairs. Externally, it is generally of a bright purple; internally, is sprinkled with black spots upon a white ground. The filaments are white, curved, and surmounted by large yellow anthers. The style is simple, and supports a bifid stigma. The seeds are numerous, very small, grayish-brown, and contained in a pyramidal two-celled capsule. The plant grows wild in the temperate parts of Europe, where it flowers in the middle of summer, and is also cultivated in this country both for ornament and for medical use.

Preparation.—The fresh leaves, from the uncultivated plant in its second season; gathered when about to bloom, are chopped and pounded to a pulp and pressed out *lege artis* in a piece of new linen. The expressed juice is then, by brisk agitation, mingled with an equal part by weight of alcohol. This mixture is allowed to stand eight days in a well-stoppered bottle, in a dark, cool place, and then filtered.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class I.

DIOSCOREA.

Synonyms, *Dioscorea Villosa*, *Linn.* *Dioscorea Quinata*. *Dioscorea Paniculata*. *Ubiu Quinatum*.

Nat. Ord., Dioscoreaceæ.

Common Names, China Root. Colic Root. Devil's Bones. Wild Yam.

This is an indigenous perennial creeper, twining over bushes and fences, in thickets and hedges. Its stems are slender, from knotty and matted root-stocks; leaves mostly alternate, sometimes nearly opposite or in fours, more or less downy underneath, heart-shaped, conspicuously pointed, nine to eleven-ribbed; flowers pale greenish-yellow, the sterile in drooping panicles, the fertile in drooping simple racemes. The flowers are very small. Stamens six, at the base of the divisions of the six-parted perianth. Pods eight to ten lines long, three-celled, three-winged, loculicidally three-valved by splitting through the winged angles. Seeds one or two in each cell, flat, with a membranaceous wing. The plant grows from New England to Wisconsin, and common southward.

Preparation.—The fresh root is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and after thoroughly mixing the pulp with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, pour it into a well-stoppered bottle, and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{4}$.

Dilutions must be prepared as directed under Class III.

DIPSACUS SYLVESTRIS, Miller.

Nat. Ord., Dipsacæ.

Common Name, Wild Teasel.

This plant is a native of Europe, from Denmark southwards, Northern Africa, and Western Asia. Its stem is three to four feet high, stout, rigid, ribs prickly. Leaves radical on the first year's growth only, spreading; cauline six to eight inches long, oblong-lanceolate, entire or crenate, midrib prickly. Heads two to three inches long; bracts linear, rigid, longer than the head; floral bracts very long, rigid, subulate, strict, ciliate; involucre pubescent, four-angled in fruit. Calyx-limb deciduous. Corolla purplish. Flowers appear in July and September.

Preparation.—The fresh plant, in flower, is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one sixth part of it, the rest of the alcohol is added. After having stirred the whole well, pour it into a well-stoppered bottle, and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{4}$.

Dilutions must be prepared as directed under Class III.

DIPTERIX ODERATA, *Willdenow.*

Synonyms, *Coumarouna Odorata*, *Aublet.* *Baryosma Tongo.*

Nat. Ord., Leguminosæ.

Common Names, Tonka Bean. Tongo or Tonquin Bean.

This is the seed of a large tree growing in Guiana. The fruit is an oblong-ovate pod, enclosing a single seed, from an inch to an inch and a half long, from two to four lines broad, usually somewhat compressed, with a dark brown, wrinkled, shining, thin, and brittle skin, and a light brown oily kernel. The bean has a strong, agreeable, aromatic odor, and a bitterish, aromatic taste.

Preparation.—The dried seeds, finely powdered, are covered with five parts by weight of alcohol. Having poured it into a well-stoppered bottle, let it remain eight days in a dark, cool place, shaking it twice a day. The tincture is then poured off, strained and filtered.

Amount of drug power, $\frac{1}{16}$.

Dilutions must be prepared as directed under Class IV.

DIRCA PALUSTRIS, *Linn.*

Nat. Ord., Thymelacææ.

Common Names, Leatherwood. Moosewood. Ropebark. Wicopy.

The leatherwood, also called *moosewood*, *ropebark*, and, in New England, *wicopy*, grows in rich damp woods from South Carolina northward to Canada, and is a much-branched shrub, about four feet high, with the branches apparently joined, and with soft, white, and brittle wood. The smooth yellowish-brown or brown-gray bark is very fibrous, and remarkably tough, hence the common names. The leaves are alternate, about three inches long, subsessile, oval-obovate, acute at each end, pale green and slightly hairy beneath. The flowers precede the leaves, are in clusters of two to four, have a light yellow, tubular funnel-shaped, four-toothed calyx, eight slender stamens, and ripen an oval, one-seeded, reddish, drupaceous fruit, which is about one-quarter inch in diameter.

Preparation.—The fresh inner bark of the twigs is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, pour it into a well-stoppered bottle, and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Amount of drug power, $\frac{1}{4}$.

Dilutions must be prepared as directed under Class III.

DOLICHOS PRURIENS, *Linn.*

Synonym, *Mucuna Pruriens*, *De Candolle.* *Carpopogon Pruriens.* *Stitzolobium Pruriens.*

Nat. Ord., Leguminosæ.

Common Names, Cowhage. Cowitch. Kiwach.

This is a perennial climbing plant, with an herbaceous branching

stem, which twines round the trees in its vicinity, and rises to a considerable height. The leaves are pinnately trifoliate, and stand on long footstalks, placed alternately on the stem at the distance of a foot from each other. The leaflets are acuminate, smooth on their upper surface, and hairy beneath. The lateral leaflets are oblique at the base, the middle one somewhat rhomboidal. The flowers, which resemble those of the pea in form, are large, of a red or purplish color, usually placed in threes on short peduncles, and hang from the axils of the leaves in pendant spikes about a foot in length. The fruit is a coriaceous pod, shaped like the Italic letter *f*, about four inches long, and covered with brown bristly hairs, which easily separate, and when handled stick in the fingers, producing an intense itching sensation. The plant is a native of the West Indies, and other parts of tropical America.

Preparation.—The hair, carefully scraped from the epidermis of the pod, is covered with five parts by weight of alcohol, and allowed to remain eight days in a well-stoppered bottle, in a dark, cool place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{16}$.

Dilutions must be prepared as directed under Class IV.

DRACONTIUM FÆTIDUM, Linn.

Synonyms, *Symplocarpus Fœtidus*, *Salisbury*. *Pothos Fœtidus*, *Micheaux*. *Ictodes Fœtidus*, *Bigelow*.

Nat. Ord., Araceæ.

Common Names, Skunk Cabbage. Fœtid Hellebore. Polecat Weed.

The *skunk cabbage* is a very curious plant, and the only one of the genus. The root is perennial, large, abrupt, and furnished with numerous fleshy fibres, which penetrate to the depth of two feet or more. The spathe which first appears is ovate, acuminate, obliquely depressed at the apex, auriculated at the base, folded inwards at the edges, and of a brownish-purple color, varied with spots of red, yellow, and green. Within the spathe, the flowers, which resemble it in color, are placed in great numbers upon a globose peduncled spadix, for which they form a compact covering. After the spathe has decayed, the spadix continues to grow, and when the fruit is mature, has attained a size exceeding several times its original dimensions. At the base of each style is a roundish seed, immersed in the spadix, about the size of a pea, and speckled with purple and yellow. The leaves, which appear after the flowers, are numerous and crowded, oblong-cordate, acute, smooth, strongly veined, and attached to the root by long petioles, which are hollowed in front, and furnished with colored sheathing stipules. At the beginning of May, when the leaves are fully developed, they are very large, being from one to two feet in length, and from nine inches to a foot in breadth. The plant is indigenous, growing abundantly in meadows, swamps, and other wet places throughout the northern and middle sections of the Union. It flowers in March and April.

Preparation.—The fresh root, gathered in spring, is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, pour it into a well-stoppered bottle, and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

DORYPHORA DECEMLINEATA.

Class, Insecta.

Order, Coleoptera.

Family, Chrysomelina.

Common Names, Colorado Beetle. Potato Bug.

This insect makes its home among the foot hills of the Rocky Mountains, where it is sustained by a species of solanum growing in that locality. It attacks the other solanaceæ (the potato, tomato), and commits widespread devastation.

Preparation.—The live insect is crushed and covered with five parts by weight of alcohol. Having been poured into a well-stoppered bottle, it is allowed to remain eight days in a dark, cool place, being shaken twice a day.

Amount of drug power, $\frac{1}{16}$.

Dilutions must be prepared as directed under Class IV.

DROSERA.

Synonyms, *Drosera Rotundifolia*, Linn. *Rorella Rotundifolia*. Ros Solis.

Nat. Ord., Droseraceæ.

Common Names, Round-leaved Sundew. Moor-grass. Red Rot. Youth Wort.

This plant grows on turfy ground, thickly covered with short moss, in the north of Europe, Bavaria, northern Asia and America. The perennial root is thin, of a deep brown; stem erect, thin, glabrous, rough, from two to eight inches high, and, previous to flowering, rolled upon itself at the summit. The leaves have long peduncles, are circular or transversely oval, disposed in a circle, somewhat juicy and breaking easily, of a pale green on the lower surface, and on the upper surface covered with many red hairs which are provided, at their extremities, with purple-red follicles, which, when exposed to the sun, exude a clear, slimy juice. The flowers, alternate, on short peduncles, white, open during dry, fine weather for a moment about noon.

Preparation.—The entire fresh plant, gathered at the commencement of flowering, is chopped and pounded to a fine pulp, and pressed out *lege artis* in a piece of new linen. The expressed juice is then, by brisk agitation, mingled with an equal part by weight of alcohol. This mixture is allowed to remain eight days in a well-stoppered bottle, in a dark, cool place, and then filtered.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class I.

DRYOBALANOPS CAMPHORA, *Colebrook*.

Synonym, Dryobalanops Aromatica, *Gærtner*.

Nat. Ord., Dipterocarpaceæ.

Common Names, Sumatra Camphor. Borneo Camphor. Barus Camphor.

This is a very large tree, often exceeding one hundred feet in height, with a trunk six or seven feet in diameter, and ranking among the tallest and largest trees in India. It is found in Sumatra and Borneo, being abundant on the northwest coast of the former island. The camphor exists in concrete masses, which occupy longitudinal cavities or fissures in the heart of the tree, from a foot to a foot and a half long, at certain distances apart. The younger trees are generally less productive than the old. The only method of ascertaining whether a tree contains camphor is by incision. As the tree requires cutting down to obtain the camphor, which in the East is sold at a high price, it therefore never enters commerce at large. A specimen sent to this country from Canton as a curiosity, was in tabular plates of the size of a finger nail or smaller, of a foliaceous crystalline texture, white, somewhat translucent, of an odor analogous to that of common camphor, and yet decidedly distinct, and less agreeable. It has also a camphorous taste. It is more compact and brittle than ordinary camphor; and, though the pieces will often float for a time when thrown on water, yet they sink when thoroughly moistened, and deprived of adhering air. According to Dr. Christison, its sp. gr. is 1009. It is easily pulverized without the addition of alcohol. It is, moreover, much less disposed to rise in vapor, and to condense on the inside of the bottle containing it. Like ordinary camphor, it is fusible, volatilizable, very slightly soluble in water, and freely soluble in alcohol and in ether. Dr. Gregory considers it as the bihydrate of camphene ($C_{20}H_{18}O_2$).

Preparation.—One part by weight of the genuine Sumatra camphor is dissolved in fifty parts by weight of alcohol.

Amount of drug power, $\frac{1}{100}$.

Dilutions must be prepared as directed under Class VI— β .

DULCAMARA.

Synonym, Solanum Dulcamara, *Linn*. Dulcis Amara.

Nat. Ord., Solanaceæ.

Common Names, Bitter-Sweet. Woody Nightshade.

This perennial plant grows almost all over Europe and North America, in moist places, in ditches, on the borders of rivers, along hedges, etc.; it is a climbing shrub, with a slender, roundish, branching, woody stem, which rises to six or eight feet in height; the leaves are alternate, petiolate, ovate, pointed, veined, soft, smooth, and of a dull green color; the flowers are disposed in elegant clusters, somewhat analogous to cymes and standing opposite to the leaves; calyx very small, purplish,

and divided into five blunt persisting segments; corolla wheel-shaped, with pointed reflecting segments, which are of a violet-blue color, with a darker purple vein running longitudinally through their centre, and two shining, greenish spots at the base of each; filaments very short, and support large, erect, lemon-yellow anthers, which cohere in the form of a cone around the style; the berries are of an oval shape and a bright scarlet color, and continue to hang in beautiful bunches after the leaves have fallen; the odor of the leaves and stem is somewhat nauseous and narcotic; their taste is first sweet and then bitter.

Preparation.—The fresh green stems covered with a gray epidermis, pliant, not ligneous, and the leaves gathered before flowering, are chopped and pounded to a fine pulp and pressed out *lege artis* in a piece of new linen. The expressed juice is then, by brisk agitation, mingled with an equal part by weight of alcohol. This mixture is allowed to stand eight days in a well-stoppered bottle, in a dark, cool place, and then filtered.

Drug power of tincture, $\frac{1}{4}$.

Dilutions must be prepared as directed under Class I.

ELAPS CORALLINUS.

Class, Reptilia.

Order, Ophidia.

Family, Elapidae.

Common Name, Coral Viper.

The elaps corallinus is found quite frequently in the woods all along the coast of Brazil, and its bite is much dreaded. Its colors are more brilliant and more agreeably combined than those of any other serpent in Brazil. Its head is small, covered with large polygonal scales; it swells behind and is continuous with the neck, from which it is scarcely distinguished as regards size. It has round and small eyes; the jaws which are little dilatable, are furnished with sharp teeth, accompanied by fangs that rest on the venomous glands. The body is about two feet and a half in length; it is round, rather big in proportion to the head, and terminates in a sharp tail. The upper part is covered with smooth rhomboidal scales; the belly is covered with two hundred transverse shields; the tail numbers fifty shields, which are disposed in two parallel rows. Its colors are disposed in the shape of rings of a vermillion-red, alternating with black rings, each two rings being separated by circular lines of a greenish-white. The upper part of the head is black, likewise the first colored ring of the neck; the shields of the jaws are white, and are separated from each other by black lines.

Preparation.—The poison, pressed from the jaws of the living animal by means of steel pincers, is triturated as directed under Class VIII.

ELATERIUM.

Synonyms, *Cucumis Agrestis*. *Ecbalium Officinatum*, *Richard*.
Momordica Elaterium, *Linn*.

Nat. Ord., Cucurbitaceæ.

Common Names, *Elaterium*. Squirting Cucumber.

The *wild* or *squirting cucumber* is a perennial plant, with a large fleshy root, from which rise several round, thick, rough stems, branching and trailing like the common cucumber, but without tendrils. The leaves are petiolate, large, rough, irregularly cordate, and of a grayish-green color. The flowers are yellow, and proceed from the axils of the leaves. The fruit has the shape of a small oval cucumber, about an inch and a half long, an inch thick, of a greenish or grayish color, and covered with stiff hairs or prickles. When fully ripe, it separates from the peduncle, and throws out its juice and seeds with considerable force through an opening at the base, where it was attached to the footstalk. The name of squirting cucumber was derived from this circumstance, and the scientific and official title is supposed to have had a similar origin; though some authors maintain that the term *elaterium* was applied to the medicine, rather from the mode of its operation upon the bowels, than from the projectile property of the fruit. This species of *momordica* is a native of the south of Europe, and is cultivated in Great Britain.

Preparation.—The fruit, not quite ripe, is pounded to a pulp, and pressed out *lege artis* in a piece of new linen. The expressed juice is then, by brisk agitation, mingled with an equal part by weight of alcohol, and allowed to stand eight days, in a well-stoppered bottle, in a dark, cool place, and then filtered.

Drug power of tincture, 1.

Dilutions must be prepared as directed under Class I.

ELEIS GUINEENSIS, Jacquin.

Nat. Ord., Palmæ.

Common Name, Palm Tree.

This species is spread all over South America; it prefers cultivated and sunny regions. Its trunk, which is from twenty-five to thirty feet high, is covered by the persistent bases of the leaves. The top-leaves form a thick tuft; they are large, pinnate, with numerous folicles, ensiform, alternate and sessile, attached to a strong rachis or spike, the petiolar portion of which is garnished with long and sharp prickles. The flowers are monœcious, with a papyraceous perianthus having six divisions. The male flowers have six stamens and three internal, erect and converging folioles. They form ramose spathes in fusiform masses, placed between the bases of the leaves. The female flowers are scattered; the ovary is sub-cylindrical, surmounted by a short style with a bilobate stigma. The fruit is oval, oleaginous, of a reddish-yellow, surrounded by a hard and angular pericarp.

Preparation.—The ripe fruit is prepared by trituration, as directed under Class IX.

EPIGÆA REPENS, Linn.

Nat. Ord., Ericaceæ.

Common Names, Trailing Arbutus. Ground Laurel.

This indigenous plant grows in sandy woods and rocky soils, generally preferring the sides of hills, with a northern exposure. It is more commonly found eastward. A prostrate or trailing, scarcely shrubby, plant, bristly with rusty hairs, with evergreen and reticulated rounded and heart-shaped alternate leaves, on slender petioles, and with rose-colored flowers in small axillary clusters, from scaly bracts. Flowers appear in early spring, and exhale a rich, spicy fragrance. Corolla salver-form; the tube hairy inside, as long as the ovate-lanceolate pointed and scale-like nearly distinct sepals. Stamens ten, with slender filaments; anthers oblong, awnless, opening lengthwise. Style slender, its apex forming a sort of ring or collar around and partly adnate to the five little lobes of the stigma. Pod depressed-globular, five-lobed, five-celled, many-seeded.

Preparation.—The fresh leaves are pounded to a fine pulp and weighed. Then two parts by weight of alcohol are taken, and after thoroughly mixing the pulp with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, pour it into a well-stoppered bottle, and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

EQUISETUM ARVENSE, Linn.

Nat. Ord., Equisetaceæ.

Common Names, Common Horsetail. Horsetail Rush.

This is a leafless plant, growing in damp soil in Europe and North America. It has a simple, smooth, fertile stem, appearing in March or April. The barren stems are slender, about two feet long, green, jointed, about twelve-furrowed, with simple or compound quadrangular branches, bearing at the joints four scales.

Preparation.—The fresh plant is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, pour it into a well-stoppered bottle, and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

EQUISETUM HYEMALE, Linn.

Nat. Ord., Equisetaceæ.

Common Names, Scouring Rush. Shave-grass.

This is a leafless plant, growing in damp soil in Europe and North America. It has a simple stem about two feet long, round, grooved,

the ridges rough, and at the joints with sheaths of about twenty narrow teeth, having a black girdle at the base and tip.

Preparation.—The fresh plant is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, pour it into a well-stoppered bottle and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

ERECOTHITES HIERACIFOLIA, *Rafinesque*.

Synonym, *Senecio Hieracifolius*, *Linn.*

Nat. Ord., Compositæ.

Common Names, Fireweed. Firewood.

This is an indigenous plant, growing in moist woods; common, especially northward, and in recent clearings, where the ground has been burned over; whence the popular name. Its stem is from one to five feet high, grooved, and often hairy. Its leaves are alternate, lanceolate or oblong, acute, cut-toothed, sessile; the upper with an auricled clasping base. Flowers whitish, in paniculate-corymbed heads. The flowers all tubular and fertile; the marginal pistillate, with a slender corolla. Scales of the cylindrical involucre in a single row, linear, acute, with a few small bractlets at the base. Receptacle naked. Achenia oblong, tapering at the end. Pappus copious, of very fine, white soft hairs. The plant has a very rank smell. Flowers appear from July to September.

Preparation.—The fresh plant, in flower, is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it the rest of the alcohol is added. After having stirred the whole well, pour it into a well-stoppered bottle and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

ERIGERON CANADENSE, *Linn.*

Nat. Ord., Compositæ-Asteroidæ.

Common Names, Canada Fleabane. Colt's Tail. Pride Weed. Scabious.

This is an indigenous annual plant, with a stem from two to six feet high, covered with stiff hairs, and divided into many branches. The leaves are linear-lanceolate and edged with hairs; those at the root are dentate. The flowers are very small, numerous, white, and arranged in terminal panicles. They differ from those of the other species of *Erigeron* in having an oblong calyx, the rays very minute

and more numerous than the florets of the disk, and the seed-down simple. Canada fleabane is very common throughout the northern and middle sections of the United States, and has become naturalized in many parts of Europe. It abounds in neglected fields, and blooms in July and August.

Preparation.—The fresh plant when in bloom is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, pour it into a well-stoppered bottle and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

ERIODICTYON CALIFORNICUM, *Benth.*

Synonyms, *Eriodictyon Glutinösium, Benth.* Yerba Santa.

Nat. Ord., Hydrophyllaceæ.

Common Names, Mountain Balm. Consumptive's Weed. Bear's Weed.

This is an evergreen shrub, from two to three feet high. The leaves are alternate, petiolate, two or three inches long, elliptic-lanceolate, subentire or finely dentate, with the upper surface smooth, green, and varnished with a resinous exudation, and the lower surface white, hairy, and delicately reticulated by a network of veins. It has axillary and terminal racemose clusters of showy purplish-blue flowers, with a funnel-shaped corolla and five stamens, and ovoid, semi-transparent capsules supported by the persistent five-lobed calyx, and containing about twenty seeds. The shrub is found growing thriftily among the rocks on the mountain ranges of central California southward to northern Mexico. Upon bruising the leaves their balsamic odor becomes more apparent; their taste is aromatic, balsamic, and free from bitterness.

Preparation.—The fresh leaves are chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, pour it into a well-stoppered bottle, and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

ERYNGIUM AQUATICUM, *Linn.*

Synonyms, *Eryngium Petiolatum.* *Eryngium Yuccæfolium.*

Nat. Ord., Umbelliferae.

Common Names, Button Snakeroot. Water Eryngo.

This is an indigenous herbaceous plant, with a perennial tuberous

root, and a stem two or three feet high, sometimes, according to Pursch, six feet, generally branching by forks, but trichotomous above. The leaves are very long, linear-lanceolate on the upper part of the stem, sword-shaped below, with bristly spines at distant intervals upon their margin. The floral leaves are lanceolate and dentate. The flowers are white or pale, and in globose heads, with the leaflets of the involucre shorter than the head, and, like the scales of the receptacle, entire. Involucre many-leaved. Proper calyx five-parted, superior, persistent. Corolla of five petals. Receptacle foliaceous, segments acute or cuspidate. Fruit bipartite. This plant is found in low wet places, as far south as Virginia or North Carolina. Its period of flowering is August. The root has a bitter, pungent, aromatic taste, provoking, when chewed, a flow of saliva.

Preparation.—The fresh root is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, pour it into a well-stoppered bottle, and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

ERYNGIUM MARITIMUM.

Nat. Ord., Umbelliferae.

Common Name, Sea Holly.

This plant is a native of Europe, and Northern Africa, growing on sandy shores. Rootstock creeping, stoloniferous. Stems one to two feet high, stout, three-chotomously branches. Radical leaves two to five inches in diameter, suborbicular three-lobed spinous, margins cartilaginous; cauline palmate. Heads about three together, half-an-inch to one inch in diameter, at length ovoid. Primary involucre of three bracts; partial of five to seven ovate spinous-serrate bracts; bracteoles trifid, equalling the flowers. Flowers one-eighth inch in diameter, bluish-white, appearing in July and August.

Preparation.—The fresh plant is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, pour it into a well-stoppered bottle, and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

EUGENIA JAMBOS, Linn.

Synonyms, *Jambosa Vulgaris*, *De Candolle*. *Myrtus Jambos*.

Nat. Ord., Myrtaceae.

Common Names, Malabar Plum-tree. Rose-apple.

This beautiful tree is a native of the Indies and the warm countries

of America; it is never without flowers or fruit, and attains a height of twenty to forty feet; the bark of the trunk is of a reddish-brown, that of the branches cracked but smooth; leaves alternate, entire, lanceolate, veined, and full of points, in length six to eight lines, of a deep green above, pale green below; peduncles terminal, ramose, multifloral; flowers large, of a dull yellow; fruit almost spherical, of the size of a medium pear, of a fine pale yellow, approaching to the rose; seeds monosperous, with four angles, and enveloped in a thin pellicle; the fruit is eaten, but the seeds, and above all the envelope, are considered poisonous; the root of this tree, it is said, contains one of the most violent poisons.

Preparation.—The fresh seeds are chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, pour it into a well-stoppered bottle, and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{4}$.

Dilutions must be prepared as directed under Class III.

EUCALYPTUS GLOBULUS, *La Billiardière*.

Nat. Ord., Myrtaceæ.

Common Names, Fever-tree. Australian Gum-tree.

This is one of the largest known trees, attaining sometimes a height of three hundred or even three hundred and fifty feet, with a smooth ash-colored bark, leaves a foot in length, varying, according to age, from a glaucous-white to a bluish-green color, and large pinkish-white axillary flowers, sometimes single, sometimes in clusters. Although its wood is very resinous, hard, and durable, the tree is remarkable for the rapidity of its growth, reaching, under favorable circumstances, fifty feet of height in five or six years. It flourishes best in valleys having a rich moist soil, and has very largely been naturalized in semi-tropical countries, partly on account of its economic value, but chiefly because of the reputation it enjoys as a means of overcoming malaria. It is a native of Australia, but large forests of it have been planted in Algeria and southern Europe, and its culture is spreading to California, Florida, and other of our Southern States.

Preparation.—The fresh leaves are chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and after thoroughly mixing the pulp with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, pour it into a well-stoppered bottle, and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

EUONYMUS ATROPURPUREUS, Jacquin.

Synonyms, *Euonymus Caroliniensis*. *Euonymus Tristis*.

Nat. Ord., Celastraceæ.

Common Names, Wahoo. Spindle-tree. Burning-bush.

This is a tall (from six to twenty feet in height), erect shrub, with quadrangular branchlets, and opposite, petiolate, oval-oblong, pointed, serrate leaves. The flowers, which stand in loose cymes on axillary peduncles, are small and dark purple, with sepals and petals commonly in fours. The capsule or pod is smooth and deeply lobed. The plant is indigenous, growing throughout the Northern and Western States, and sometimes cultivated for the beauty of its crimson fruit.

Preparation.—The fresh bark of the twigs and root, of the uncultivated plant, is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and after thoroughly mixing the pulp with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, pour it into a well-stoppered bottle, and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{4}$.

Dilutions must be prepared as directed under Class III.

EUONYMUS EUROPÆUS, Linn.

Nat. Ord., Celastraceæ.

Common Name, Spindle-tree.

The common spindle-tree is a bush occurring everywhere in Europe in hedges and bushes, becoming sometimes as large as a tree. It has lanceolate, at the margin crenate leaves, and small pale green, raceme-like, four-petaled flowers, sitting on forky-partite peduncles. The fleshy seed-capsule, rose-colored, when ripe, mostly quadrilocular, contains as many roundish, saffron-yellow seeds, of a disagreeable smell and bitter taste.

Preparation.—The fresh fruit, as soon as it begins to turn red, is pounded to a pulp, and pressed out *lege artis* in a piece of new linen. The expressed juice is then, by brisk agitation, mingled with an equal part by weight of alcohol, and allowed to stand eight days in a well-stoppered bottle, in a dark, cool place, and then filtered.

Drug power of tincture, $\frac{1}{4}$.

Dilutions must be prepared as directed under Class I.

EUPATORIUM AROMATICUM, Linn.

Nat. Ord., Compositæ.

Common Names, Pool Root. White Snake-Root.

This is an indigenous plant, growing in copses, from Massachusetts to Virginia and southward, near the coast. The entire plant is smooth or slightly downy. The stem is slender, nearly simple, about two feet high, terminating in large, white flower-heads. Leaves on short petioles, opposite, ovate, rather obtusely toothed, not pointed, and

thickish. The heads are twenty to thirty-flowered; the scales of the involucre nearly equal and in one row.

Preparation.—The fresh root, gathered in autumn, is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it the rest of the alcohol is added. After having stirred the whole well, pour it into a well-stoppered bottle and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

EUPATORIUM PERFOLIATUM, *Linn.*

Synonym, Eupatorium Salviaefolium.

Nat. Ord., Compositæ.

Common Names, Ague Weed. Boneset. Thoroughwort. Vegetable Antimony.

This is an indigenous perennial plant, with numerous herbaceous stems, which are erect, round, hairy, from two to five feet high, simple below and trichotomously branched near the summit. The leaves serve to distinguish the species at the first glance. They may be considered either as perforated by the stem, *perfoliate*, or as consisting each of two leaves, joined at the base, *connate*. In the latter point of view they are opposite and in pairs, which decussate each other at regular distances upon the stem; in other words, the direction of each pair is at right angles with that of the pair immediately above or beneath it. They are narrow in proportion to their length, broadest at the base where they coalesce, gradually tapering to a point, serrate, much wrinkled, paler on the under than the upper surface, and beset with whitish hairs, which give them a grayish-green color. The uppermost pairs are sessile, not joined at the base. The flowers are white, numerous, supported on hairy peduncles, in dense corymbs, forming a flattened summit. The calyx, which is cylindrical and composed of imbricated, lanceolate, hairy scales, encloses from twelve to fifteen tubular florets, having their border divided into five spreading segments. The anthers are five, black, and united into a tube, through which the bifid filiform style projects.

This species of Eupatorium inhabits meadows, the banks of streams and other moist places, growing generally in bunches, and abounding in almost all parts of the United States. It flowers from the middle of summer to the end of October.

Preparation.—The fresh herb, just in bloom, is chopped and pounded to a fine pulp and weighed. Then two parts by weight of alcohol are taken, and after thoroughly mixing the pulp with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, pour it into a well-stoppered bottle, and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

EUPATORIUM PURPUREUM, Linn.

Nat. Ord., Compositæ.

Common Names, Gravel-root. Joe Pye Weed. Purple Boneset. Queen of the Meadow. Trumpet Weed.

This is a perennial herbaceous plant, with a purple stem, five or six feet in height, and furnished with ovate-lanceolate, serrate, rugosely veined, slightly scabrous, petiolate leaves, placed four or five together in the form of whorls. The flowers are purple, and consist of numerous florets contained in an eight-leaved calyx. It grows in swamps and other low grounds, from Canada to Virginia, and flowers in August and September.

Preparation.—The fresh root, gathered in autumn, is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and after thoroughly mixing the pulp with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, pour it into a well-stoppered bottle, and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

EUPHORBIA COROLLATA, Linn.

Nat. Ord., Euphorbiaceæ.

Common Names, Bowman's Root. Large-flowering Spurge. Milk Weed. Wild Ipecac.

This is an erect plant, with a large, perennial, branching, yellowish root, which sends up several stems from two to five feet in height, round and generally simple. The leaves, which stand irregularly upon the stem, and without footstalks, are oblong-obovate, wedge-form or linear, flat or revolute at the margin, smooth in some plants, and hairy in others. The flowers are disposed upon a large terminal umbel, with a five-leaved involucre, and five trifold and dichotomous rays, at each fork of which are two oblong bracts. The calyx is large, rotate, white, with five obtuse segments closely resembling a corolla, from which the species has been named. At the base of these divisions are five interior smaller segments, which are described as nectaries by many systematic writers, while the larger are considered as belonging to a real corolla. The stamens are twelve; evolving gradually, with double anthers. Many flowers have only stamens. The pistil, when existing, is stipitate, nodding, rounded, with three bifid styles. The fruit is a smooth, three-celled, three-seeded capsule.

The plant grows in various parts of the United States, from Canada to Florida, and abounds in Western Pennsylvania, Maryland, and Virginia. It prefers a dry, barren, and sandy soil, seldom growing in woods or on the borders of streams.

Preparation.—The fresh root is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and after thoroughly mixing the pulp with one-sixth part of it, the rest of

the alcohol is added. After having stirred the whole well, pour it into a well-stoppered bottle, and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

EUPHORBIA HYPERCİFOLIA, Linn.

Nat. Ord., Euphorbiaceæ.

Common Names, Milk Parsley. Spurge.

This plant is indigenous to the United States, where it is very common, in open places, and cultivated soils. Its stem is smooth or with scattered hairs, ascending or erect, from one to two feet high; leaves oblique at the obtuse or slightly cordate base, ovate-oblong or oblong-linear, sometimes falcate, serrate (half-an-inch to one and half an inch long), often with a red spot or red margins; stipules triangular; peduncles longer than the petioles, collected in loose leafy cymes at the end of the branches; appendages of the involucre entire, larger and white, or smaller and sometimes red; pod glabrous, obtusely angled; seeds ovate obtusely angled, wrinkled and tubercled, half a line long, blackish.

Preparation.—The fresh plant is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, pour it into a well-stoppered bottle, and let stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Amount of drug power, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

EUPHORBIA VILLOSA.

Synonyms, *Euphorbia Pilosa*, Linn. *Euphorbia Sylvestris*.

Nat. Ord., Euphorbiaceæ.

Common Name, Spurge.

This variety is indigenous to Europe from south France and Germany southwards, and western Siberia, where it is found growing in copses and hedges. Rootstock stout; stems one to three feet high, stout, leafy, much branched above; leaves two to five inches long, obtuse, narrowed at the base, lower obscurely petioled, upper sessile; bracts short, often orbicular; involucre large; glands large, oblong, purple; capsule one-fifth inch long, glands prominent, with pencils of hairs; seeds broad, brown. Flowers appear in May and June.

Preparation.—The fresh root is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, pour it into a well-stoppered bottle, and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Amount of drug power, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

EUPHORBIIUM.

Synonyms, *Euphorbia Resinifera*, *Berg.* *Euphorbium Tenella*.

Nat. Ord., Euphorbiaceæ.

Common Name, Euphorbium.

This plant is indigenous to the lower slopes of the Atlas Mountains of Morocco. It has an ascending, cactus-like, fleshy, quadrangular stem with spreading branches, and, instead of leaves, is furnished with divergent, spinescent stipules, situated in pairs on the angles; the flowers are in pedunculate cymes of three, or rarely more. On wounding the branches a milk-juice exudes, which hardens upon the plant, usually encrusting the spines. Euphorbium as found in the shops is in roundish, somewhat three-cornered, cylindrical, or irregular pieces, varying considerably in size, the largest measuring nearly an inch. The shape is influenced by the portion of the plant around which the exudation is hardened, and most pieces are observed with one or more holes, and inclosing fragments of the spines, flowers, or fruit. Euphorbium is brownish-yellow, somewhat translucent, brittle, nearly inodorous; but the dust excites violent sneezing, and, if inhaled, acts as an acrid poison. The taste is at first slight, afterwards burning and acrid. When heated it gives off a faint odor, suggesting that of benzoin, afterwards fuses and burns with a bright, sooty flame.

Preparation.—The powdered gum resin is covered with five parts by weight of alcohol, and allowed to remain eight days in a well-stoppered bottle in a dark, cool place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{16}$.

Dilutions must be prepared as directed under Class IV.

EUPHRASIA.

Synonym, *Euphrasia Officinalis*, *Linn.*

Nat. Ord., Scrophulariaceæ.

Common Name, Eyebright.

This little annual plant grows in the meadows, on the borders of forests, all over Europe. The root is very small, hairy; the stem rounded, downy, from five to twelve inches high, ramose at the base, and sometimes simple; leaves alternate, sessile, oval, obtuse, glabrous, thick, sharp-toothed; flowers axillary, in a terminal spike; calyx cylindric, four-leaved; corolla white, labiated, lobed; capsule double, oval, oblong; anthers two-horned, spinous at the base, on one of the lobes.

Preparation.—The fresh plant, omitting the root, gathered when in flower in July and August, principally from meagre, sunny places, is chopped and pounded to a pulp and weighed. Then take two-thirds by weight of alcohol, and moisten the chopped plant with as much of it as is necessary to make a thick pulp, and stir it well. Then add the rest of the alcohol, mix thoroughly and strain *lege artis* through a piece of new linen. The tincture thus obtained is allowed to stand eight days in a well-stoppered bottle, in a dark, cool place, and then filtered.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class II.

EUPION.

This is one of the products resulting from the dry distillation of wood. Mention is made of it under the preparation of Kreosotum.

Preparation for Homœopathic Use.—One part by weight of eupion is dissolved in fifty parts by weight of 95 per cent. alcohol.

Drug power of tincture, $\frac{1}{100}$.

Dilutions must be prepared as directed under Class VI— β .

FAGOPYRUM ESCULENTUM, *Mench.*

Synonym, Polygonum Fagopyrum, *Linn.*

Nat. Ord., Polygonaceæ.

Common Name, Buckwheat.

This is an annual, indigenous to Central Asia, but is cultivated in most parts of the world. Its stem is smooth, with triangular heart-shaped or halberd-shaped leaves, semi-cylindrical sheaths, and corymbose racemes or panicles of white flowers, often tinged with green or rose-color. Calyx petal-like, equally five-parted, withering and nearly unchanged in fruit. Stamens eight, and eight honey-bearing, yellow glands, interposed between the stamens. Styles three, stigma capitate. Aschenium three-sided, acute and entire, longer than the calyx. Embryo large, in the centre of the albumen, which it divides into two parts, with very broad and foliaceous plated and twisted cotyledons.

Preparation.—The fresh, mature plant, is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, pour it into a well-stoppered bottle, and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Amount of drug power, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

FARFARA.

Synonym, Tussilago Farfara, *Linn.*

Nat. Ord., Compositæ.

Common Name, Coltsfoot.

Coltsfoot is a perennial herb, indigenous to Europe and Northern Asia, and grows in damp clayey soil, and along ditches and brooks. The rhizome is creeping, twelve to eighteen inches long, radiating on the nodes, and of a grayish-white or pale brownish color. The leaves appear after the flowers, and are radical, long-petiolate, four to six inches long and broad, roundish heart-shaped, angular-toothed, dark green and smooth above, and white tomentose beneath. The leaves are rather fleshy while fresh. The flower-heads are smaller than those of dandelion, make their appearance in early spring upon scaly scapes,

and have a cylindrical involucre of lance-linear scales, in a single row, numerous yellow narrowly ligulate pistillate ray florets in many rows, and about twenty tubular staminate disk florets. The pappus is long, silky-hairy, and white.

Preparation.—The fresh herb is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, pour it into a well-stoppered bottle, and let it stand eight days, in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{8}$.

Dilutions must be prepared as directed under Class III.

FERRI ET STRYCHNIAE CITRAS.

Citrate of Iron and Strychnia.

Preparation of Citrate of Iron and Strychnia.—Take of citrate of iron and ammonium five hundred grains; strychnia, citric acid, each five grains; distilled water nine fluid drachms. Dissolve the citrate of iron and ammonium in a fluid ounce, and the strychnia together with the citric acid in a fluid drachm of the distilled water. Mix the two solutions, evaporate the mixture by means of a water-bath, at a temperature not exceeding 140° F., to the consistence of syrup; and spread it upon plates of glass, so that the salt, when it is dry, may be obtained in scales.

This is simply a mixture of citrate of strychnia with ammonio-ferric citrate, scaled in precisely the same manner as the other iron preparations.

Properties and Tests.—It closely resembles ammonio-citrate of iron in appearance, but differs from it in the distinctly bitter taste and in the white precipitate produced by ammonia, the precipitate being soluble in boiling alcohol, from which, if the solution is sufficiently concentrated, crystals will be obtained giving the peculiar reactions of strychnia.

Preparation for Homœopathic Use.—Citrate of iron and strychnia is prepared by trituration, as directed under Class VII.

FERRUM.

Synonyms, Ferrum Metallicum. Ferrum Reductum. Ferrum Hydrogenio Reductum.

Common Name, Iron.

Preparation of Iron by Hydrogen.—Take of subcarbonate of iron thirty troy ounces. Wash the subcarbonate thoroughly with water, until no traces of sulphate of sodium are indicated by the appropriate tests, and calcine it in a shallow vessel until free from moisture. Then spread it upon a tray, made by bending an oblong piece of sheet iron in the form of an incomplete cylinder, and introduce this into a wrought iron reduction-tube, of about four inches in

diameter. Place the reduction-tube in a charcoal furnace; and, by means of a self-regulating hydrogen generator, pass through it a stream of hydrogen gas, previously purified by bubbling successively through a solution of subacetate of lead diluted with three times its volume of water, and through milk of lime, severally contained in four-pint bottles about one-third filled. Connect with the further extremity of the reduction-tube a lead tube bent so as to dip into water. Make all the junctions air-tight by appropriate lutes; and, when the hydrogen has passed long enough to fill the whole of the apparatus to the exclusion of atmospheric air, light the fire, and bring that part of the reduction-tube occupied by the subcarbonate to a dull red heat, which must be kept up so long as the bubbles of hydrogen, breaking from the water covering the orifice of the lead tube, are accompanied by visible aqueous vapor. When the reduction is completed, remove the fire, and allow the whole to cool to the ordinary temperature, keeping up, during the refrigeration, a moderate current of hydrogen through the apparatus. Withdraw the product from the reduction-tube, and, should any portion of it be black instead of iron-gray, separate such portion for use in a subsequent operation. Lastly, having powdered the reduced iron, keep it in a well-stoppered bottle. When thirty troy ounces of subcarbonate of iron are operated on, the process occupies from five to eight hours.

Properties.—Reduced iron is a very fine gray powder, free from metallic lustre, but exhibiting metallic streaks when rubbed with firm pressure in a mortar, and yielding a lustrous scale when struck on an anvil with a hammer. It is wholly dissolved by dilute hydrochloric or sulphuric acid with the evolution of hydrogen, which is free from a noxious odor, and does not impart a black color to filtering paper moistened with solution of lead acetate, stretched over the orifice of the test-tube; the black color would be due to the presence of sulphur resulting from the sulphate which remains in incompletely washed ferric hydrate. The solution obtained should not assume a red color when tested with sulphocyanide of potassium, proving the absence of ferric or rather magnetic oxide; the presence of magnetic oxide is indicated by the black instead of gray color of the powder. Treated with iodine or bromine, dissolved in solutions of potassium iodide or bromide, the iron will be all dissolved, while the black oxide remains behind; the former is used as a test by the British, the latter by the German Pharmacopœia, both permitting 50 per cent residue, which should be completely soluble in hydrochloric acid. When reduced iron is touched with a lighted taper, it ignites and burns to brown ferric oxide.

Tests.—The pharmaceutical purity of reduced iron is indicated by the behavior described above.

Preparation for Homœopathic Use.—Pure reduced iron is prepared by trituration, as directed under Class VII.

FERRUM ACETICUM.

Synonyms, Ferri Acetas. Ferric Acetate. Ferrum Oxydatum Aceticum.

Common Name, Acetate of Iron.

Formula, $\text{Fe}_2 6 \text{C}_2 \text{H}_3 \text{O}_2$.

Preparation of Acetate of Iron.—Take of solution of persulphate of iron two and a half fluid ounces; acetate of potash two ounces (avoird.); rectified spirit eighteen fluid ounces. Dissolve the acetate of potash in ten fluid ounces, and add the persulphate of iron to eight fluid ounces of the spirit; then mix the two solutions in a two-pint bottle, and shake them well together, repeating the agitation several times during an hour. After allowing the precipitate to settle, the clear liquid is decanted and evaporated at a temperature of about 60°C . (140°F .), until a dry mass remains, which must be preserved in a well-stoppered bottle.

On mixing solutions of ferric sulphate and potassium acetate, the mixture assumes a dark, blood-red color from the formation of ferric acetate; $\text{Fe}_2 3 \text{SO}_4 + 6 \text{KC}_2 \text{H}_3 \text{O}_2$ yields $\text{Fe}_2 6 \text{C}_2 \text{H}_3 \text{O}_2 + 3 \text{K}_2 \text{SO}_4$. The sulphate of potassium which is produced at the same time, being insoluble in alcohol, is precipitated, the clear liquid being an alcoholic solution of ferric acetate needs but to be cautiously evaporated to dryness.

Tests.—The alcoholic solution of acetate of iron, being precipitated by an excess of ammonia, yields a filtrate which is not precipitated by sulphuretted hydrogen (*zinc*, etc.), barium chloride (*sulphate*); or, after having been acidulated with nitric acid, by nitrate of silver; and, on being evaporated at the boiling temperature does not leave any fixed residue.

Preparation for Homœopathic Use.—One part by weight of acetate of iron is dissolved in nine parts by weight of distilled water.

Amount of drug power, $\frac{1}{10}$.

Dilutions must be prepared as directed under Class V—*a*.

The solutions and dilutions do not keep well, and should therefore always be freshly prepared.

Triturations are prepared as directed under Class VII.

FERRUM ARSENICICUM.

Synonyms, Ferri Arsenias. Ferrum Arseniatum. Tri-ferric Diarseniate.

Common Name, Arseniate of Iron.

Formula, $2 \text{Fe}_3 \text{As}_2 \text{O}_8 \cdot 4 \text{Fe As O}_4 \cdot \text{Fe}_2 \text{O}_3 \cdot 32 \text{H}_2 \text{O}$.

Molecular Weight, 2408.

Preparation of Arseniate of Iron.—Take of sulphate of iron, nine ounces; arseniate of soda dried at 300°F ., four ounces; acetate of soda, three ounces; boiling distilled water, a sufficiency. Dissolve the arseniate and acetate of soda in two pints, and the sulphate of iron in three pints of the water, mix the two solutions, collect the white precipitate which forms, on a calico filter, and wash until the washings cease

be affected by a dilute solution of chloride of barium. Squeeze the washed precipitate between folds of strong linen in a screw press, and dry it on porous bricks in a warm air-chamber, whose temperature shall not exceed 100° F.

On mixing solutions of ferrous sulphate and the officinal disodium arseniate, a white precipitate takes place, which is a mixture of ferrous arseniate ($\text{Fe}_3 \text{As}_2 \text{O}_8$), and ferrous hydrarseniate ($\text{Fe}_2 \text{H}_4 \text{As}_2 \text{O}_9$). In the presence of sodium acetate, however, only the former is precipitated, and free acetic acid is found in the liquid besides sulphate of sodium. The reaction occurs as follows: $3 \text{Fe SO}_4 + 2 \text{Na}_2 \text{H As O}_4 + 2 \text{Na C}_2 \text{H}_3 \text{O}_2 = \text{Fe}_3 \text{As}_2 \text{O}_8 + 2 \text{H C}_2 \text{H}_3 \text{O}_2 + 3 \text{Na}_2 \text{SO}_4$. The white precipitate is very bulky, and while being washed to free it from the mother-liquor and dried, it is oxidized and converted into ferroso-ferric arseniate of the formula given above. The change is indicated by the gradual disappearance of the white color until the salt finally becomes blue-green. In the reaction and final result the process corresponds nearly with the one for the officinal phosphate of iron.

Properties and Tests.—Arseniate of iron is a green or blue-green amorphous powder, insoluble in water and alcohol, but dissolving readily in dilute hydrochloric acid, yielding a bright yellow solution, in which blue precipitates are produced with both ferrocyanide and ferricyanide of potassium, and which yields with sulphuretted hydrogen first a milkiness (sulphur) and afterwards a yellow precipitate of sulphide of arsenic. It contains nearly 24 per cent. of water, most of which is expelled when heated to 100° C. (212° F.). If the heat is increased, a crystalline sublimate of arsenious acid is obtained. It may be distinguished from phosphate of iron, which resembles it in appearance, by boiling a small portion with an excess of caustic soda, filtering and neutralizing exactly with nitric acid, when a brick-red precipitate of arseniate of silver will be produced on the addition of silver nitrate. Phosphate of iron, similarly treated, yields a yellow precipitate.

Preparation for Homœopathic Use.—The pure arseniate of iron is prepared by trituration, as directed under Class VII.

FERRUM BROMICUM.

Synonym, Ferri Bromidum.

Common Name, Bromide of Iron.

Formula, Fe Br_2 .

Molecular Weight, 216.

Preparation of Bromide of Iron.—It is prepared by gradually adding two parts of bromine to one part of iron filings or wire, contained under water, and digesting until the liquid has a greenish color, when it is filtered and evaporated in an iron dish to dryness.

Properties.—It forms a grayish-black mass which, on exposure to air, acquires a brown color through oxidation. On being heated to redness in contact with the atmosphere, it is converted into ferric oxide and ferric bromide, the latter subliming in yellow scales. It is dangerously poisonous.

Preparation for Homœopathic Use.—The pure bromide of iron is prepared by trituration, as directed under Class VII.

FERRUM CARBONICUM.

Synonyms, Ferri Carbonas Saccharata. Ferrous Carbonate.

Common Name, Saccharated Carbonate of Iron.

Formula, $\text{Fe Co}_3. \text{H}_2 \text{O}$.

Molecular Weight, 134.

Preparation.—Five parts of pure sulphate of iron, dissolved in twenty parts of distilled water, are mixed with four parts of bicarbonate of soda dissolved in fifty parts of distilled water, and for two hours exposed to a temperature of 100°C . (180°F). The precipitate thoroughly freed from sulphuric acid, collected and as well pressed out as possible, is then mixed with eight parts by weight of sugar and thoroughly dried in a water-bath.

This preparation contains one-fifth of ferrum carb., and when triturated with the same quantity of sugar of milk gives the 1st decimal trituration.

Further triturations are prepared as directed under Class VII.

FERRUM IODATUM.

Synonyms, Ferri Iodidum. Ferrous Iodide.

Common Name, Iodide of Iron.

Formula, Fe I_2 .

Molecular Weight, 310.

Preparation of Iodide of Iron.—Take of fine iron wire, one and a half ounces; iodine, three ounces; distilled water, fifteen fluid ounces. Put the iodine, iron, and twelve ounces of the water into a flask, and having heated the mixture gently for about ten minutes, raise the heat and boil until the froth becomes white. Pass the solution as quickly as possible through a wet calico filter into a dish of polished iron, washing the filter with the remainder of the water, and boil down until a drop of the solution taken out on the end of an iron wire solidifies on cooling. The liquid should now be poured out on a porcelain dish, and, as soon as it has solidified, should be broken into fragments and inclosed in a well-stoppered bottle.

Iodine unites with iron in the presence of water, forming a green solution of ferrous iodide which, on evaporation, is readily oxidized; hence the direction to evaporate in a polished iron dish, which, however, cannot prevent the formation of oxide, or possibly oxy-iodide of iron. The residuary salt is therefore never completely soluble in water.

Properties and Tests.—According to De Luca, pure anhydrous ferrous iodide is white and, in the presence of moisture, greenish. The British Pharmacopœia requires it to be green with a tinge of brown. By the officinal process, however, it is usually obtained as a steel-gray laminated mass, with a metallic lustre, fusing at about 177°C . (350°F .) and evolving vapors of iodine. It is deliquescent when pure, dis-

solves readily with a green color in water, also in glycerin and alcohol, the solution yielding a dark blue precipitate with potassium ferri-cyanide, and separating iodine on the addition of a little chlorine water, when on the further addition of mucilage of starch a blue coloration will be produced.

Preparation for Homœopathic Use.—The pure and freshly prepared iodide of iron is triturated as directed under Class VII.

FERRUM LACTICUM.

Synonyms, Ferri Lactas. Ferrous Lactate. Oxyduli Ferri.

Common Name, Lactate of Iron.

Formula, $\text{Fe } 2 \text{ C}_3 \text{ H}_5 \text{ O}_3. \quad 3 \text{ H}_2 \text{ O}.$

Molecular Weight, 288.

Preparation of Lactate of Iron.—Take of lactic acid, a fluid ounce; iron, in the form of filings, half a troy ounce; distilled water, a sufficient quantity. Mix the acid with a pint of distilled water in an iron vessel, add the iron, and digest the mixture on the water-bath, supplying distilled water, from time to time, to preserve the measure. When the action has ceased, filter the solution while hot into a porcelain capsule, and set it aside to crystallize. At the end of forty-eight hours decant the liquid, wash the crystals with a little alcohol, and dry them on bibulous paper. By evaporating the mother-water in an iron vessel to one-half, filtering it while hot, and setting the liquid aside, more crystals may be obtained.

The iron unites directly with the acid, displacing the basylous hydrogen, the solution of ferrous lactate merely requiring to be evaporated and crystallized.

Properties.—It is a greenish-white or yellowish crystalline powder or crusts, having a sweetish and mild chalybeate taste, and containing 19 per cent. of water of crystallization. It is insoluble in cold alcohol, dissolves in 48 parts of water at $10^\circ \text{ C. (} 50^\circ \text{ F.)}$, and in 12 parts of boiling water. On the application of heat it turns brown and black, and then, with frothing, emits white acid vapors. In contact with the air the aqueous solution turns speedily brown, forming ferric lactate; the salt boiled for fifteen minutes with an excess of nitric acid, diluted with an equal bulk of water, yields on cooling white granules of mucic acid.

Tests.—The salt is not liable to be contaminated with impurities except ferric salt, the formation of which it is difficult to prevent by the officinal process. Accidental and wilful adulterations are detected by adding to the aqueous solution neutral acetate of lead, which should scarcely cause a slight turbidity. A white precipitate might indicate the presence of hydrochloric, sulphuric, citric, malic, or tartaric acid. When heated with a slight excess of caustic soda and filtered from the precipitate, the nearly cold liquid should not yield a white coagulation on the addition of alcohol (absence of gum) or produce a red precipitate on boiling with a little sulphate of copper (absence of sugar).

Preparation for Homœopathic Use.—The pure lactate of iron is prepared by trituration, as directed under Class VII.

FERRUM MAGNETICUM.

Synonyms, Ferrum Oxydatum Magneticum. Ferri Oxidum Magneticum. Tri-ferro-tetroxide.

Common Names, Magnetic Oxide of Iron. Black Oxide of Iron. Loadstone.

Formula, $\text{Fe}_3 \text{O}_4 = \text{Fe O. Fe}_2 \text{O}_3$.

Molecular Weight, 232.

Preparation of Magnetic Oxide of Iron.—Take of solution of persulphate of iron, five and one-half fluid ounces; sulphate of iron, two ounces; solution of soda, four pints; distilled water, a sufficiency. Dissolve the sulphate of iron in two pints of the water, and add to it the solution of persulphate of iron; then mix this with the solution of soda, stirring them well together. Boil the mixture, let it stand for two hours, stirring it occasionally; then put it on a calico filter until it ceases to give a precipitate with chloride of barium. Lastly, dry the precipitate at a temperature not exceeding 120°F .

Properties and Tests.—It is a tasteless brownish-black powder, which is strongly attracted by the magnet, and dissolves without effervescence in warm hydrochloric acid diluted with half its volume of water. This solution yields blue precipitates with ferrocyanide and ferricyanide of potassium. When heated in a test-tube it gives off moisture, and when the heat is continued in contact with the air, red ferric oxide is left. Sulphuretted hydrogen added to the dilute solution in hydrochloric acid, should produce only a white turbidity from separated sulphur, but not a black precipitate (absence of copper, etc.). Should it have been insufficiently washed, the alkaline sulphates or chlorides may be detected in the distilled water, shaken with a portion of the oxide.

Preparation for Homœopathic Use.—The pure magnetic oxide of iron is prepared by trituration, as directed under Class VII.

FERRUM MURIATICUM.

Synonyms, Ferric Chloride. Ferri Chloridum. Ferrum Sesquichloratum.

Common Names, Chloride of Iron. Muriate of Iron. Sesquichloride (Perchloride) of Iron.

Formula, $\text{Fe}_2 \text{Cl}_6 12 \text{H}_2 \text{O}$.

Molecular Weight, 541.

Preparation of Chloride of Iron.—Take of iron in the form of wire cut into pieces, two troy ounces; muriatic acid, twelve troy ounces; nitric acid, a troy ounce, or a sufficient quantity. Add the iron to eight troy ounces of the muriatic acid, contained in a two-pint flask, and apply a gentle heat until the acid is saturated, and effervescence has ceased. Filter the solution, add to it the remainder of the muriatic acid, heat the mixture nearly to the boiling point, in a four-pint porcelain capsule, and add nitric acid in successive portions until red fumes are no longer evolved, and a drop of the liquid ceases to yield a blue precipitate with ferricyanide of potassium. Transfer the

liquid to a smaller capsule, evaporate it by a gentle heat, on a sand-bath, until reduced to eight troy ounces and three hundred and sixty grains, and set aside the residue, covered with glass, until it forms a solid, crystalline mass. Lastly, break this into pieces, and keep the fragments in a well-stoppered bottle protected from the light.

Properties.—The officinal ferric chloride forms orange-colored, wart-like pieces, which have a crystalline texture, are very deliquescent, and readily and completely soluble in water, alcohol and ether, yielding yellowish-brown solutions of an acid reaction, and a strongly ferruginous taste. The crystals fuse, according to Ordway, at 35.5° C. (96° F.); at a higher temperature they are partly decomposed and volatilized.

Tests.—The complete solubility in the menstrua mentioned is generally an indication of the absence of other metallic salts. A solution of the chloride in water should not be precipitated by barium chloride (absence of sulphate), and when precipitated by an excess of ammonia, the filtrate, on evaporation to dryness, should leave only ammonium chloride, which is completely volatilized at a red heat (absence of alkalies, alkaline earths, zinc, etc.). Copper, if present, is detected by the black precipitate formed by the aqueous solution with sulphuretted hydrogen.

Preparation for Homœopathic Use.—One part by weight of pure chloride of iron is dissolved in nine parts by weight of alcohol.

Amount of drug power, $\frac{1}{10}$.

Dilutions must be prepared as directed under Class VI—*a*.

FERRUM PHOSPHORICUM.

Synonyms, Ferri Phosphas. Ferrous Hydric Phosphate.

Common Name, Phosphate of Iron.

Formula, $\text{Fe}_3 2 \text{PO}_4 \cdot \text{Fe PO}_4 \cdot 12 \text{H}_2\text{O}$.

Molecular Weight, 725.

Preparation of Phosphate of Iron.—Take of sulphate of iron, five troy ounces; phosphate of sodium, six troy ounces; water, eight pints. Dissolve the salts separately, each in four pints of water; then mix the solutions, and set aside the mixture until the precipitate has subsided. Lastly, having poured off the supernatant liquid, wash the precipitate with hot water, and dry it with a gentle heat.

Properties.—It is a tasteless and inodorous bluish powder, varying somewhat in shade. It is insoluble in water, dissolves in hydrochloric acid, yielding a yellow solution in which dark blue precipitates are produced by both ferro- and ferricyanide of potassium. If the acid solution is treated with sufficient tartaric acid, and then with an excess of ammonia, no precipitate is produced; but, on the addition of sulphate of magnesium, a white precipitate falls. When the powder is boiled with caustic soda, the filtrate, after being neutralized, yields a yellow precipitate with nitrate of silver. Both precipitates indicate phosphoric acid. The chemical composition varies to some extent, and is influenced by its exposure to the atmosphere while moist, the temperature at which it is dried, etc.

Tests.—The salt should yield nothing to hot distilled water (insufficient washing), and the solution in hydrochloric acid should only yield a white turbidity of sulphur with sulphuretted hydrogen, but not a black (copper, etc.) or a yellow (arsenic) precipitate. The same solution, digested with bright copper, does not form a dark deposit of arsenic upon the metal.

Preparation for Homœopathic Use.—The pure phosphate of iron is prepared by trituration as directed under Class VII.

FERRUM PYROPHOSPHORICUM.

Synonyms, Ferri Pyrophosphas. Ferrum Pyrophosphoricum cum Ammonio Citrico.

Common Name, Pyrophosphate of Iron.

Preparation of Pyrophosphate of Iron.—Take of phosphate of sodium, seven troy ounces and a half; solution of tersulphate of iron, seven fluid ounces, or a sufficient quantity; citric acid, two troy ounces; water of ammonia, five fluid ounces and a half, or a sufficient quantity; water, a sufficient quantity. Heat the phosphate of sodium in a porcelain capsule until it undergoes the watery fusion, and continue the heat until it becomes dry. Transfer the dry salt to a shallow iron capsule, and heat it to incipient redness, without fusion. Then dissolve it in three pints of water, with the aid of heat and, having filtered the solution and cooled it to the temperature of 50° F., add solution of tersulphate of iron until this ceases to produce a precipitate. Stir the mixture thoroughly and pour it upon a muslin strainer and, when the precipitate has drained wash it with water until the washings pass nearly tasteless, and transfer it to a weighed porcelain capsule.

To the citric acid, contained in a suitable vessel, add water of ammonia, until the acid is saturated and dissolved. Then add the solution to the precipitate in the weighed capsule, stir them together and evaporate until the liquid is reduced to sixteen troy ounces. Spread this on plates of glass or porcelain, so that the salt, when it is dry, may be obtained in scales. Lastly, preserve it in a well-stoppered bottle, protected from light.

Properties.—The salt is obtained in transparent apple-green scales, which are freely soluble in water, yielding a greenish solution; this has a slightly saline and mild chalybeate taste, and gives, with potassium ferrocyanide, a blue color, but no precipitate. Exposed to dry air, the scales become opaque, and are then but partly soluble in water, but wholly so on the addition of some ammonia. Excess of ammonia produces no precipitate, but boiling with caustic potassa yields a yellowish-white deposit. The officinal salt represents 48 per cent. of anhydrous ferric pyrophosphate.

Preparation for Homœopathic Use.—Pyrophosphate of iron is prepared by trituration, as directed under Class VII.

FERRUM SULPHURICUM.

Synonyms, Ferri Sulphas. Ferrous Sulphate.

Common Name, Sulphate of Iron.

Formula, $\text{Fe SO}_4 \cdot 7\text{H}_2\text{O}$.

Molecular Weight, 278.

Preparation of Sulphate of Iron.—Take of iron in the form of wire and cut in pieces, twelve troy ounces; sulphuric acid, eighteen troy ounces; water, eight pints. Mix the sulphuric acid and water, and add the iron; then heat the mixture until effervescence ceases. Pour off the solution, and, having added thirty grains of sulphuric acid, filter through paper, allowing the lower end of the funnel to touch the bottom of the receiving vessel. Place the filtered liquid in a matress and evaporate until sufficiently concentrated; then set it aside in a covered vessel to crystallize. Drain the crystals in a funnel, dry them on bibulous paper, and keep them in a well-stoppered bottle.

The salt is prone to oxidation if its chemically neutral solution is evaporated to crystallization; but in the presence of some free sulphuric acid yields crystals which are far more permanent. This explains the necessity of having some free sulphuric acid in the liquid from which ferrous sulphate is crystallized. The crystals are collected upon a diaphragm, washed rapidly with a little water to remove the mother-liquor, and then dried.

Properties.—Ferrous sulphate is in transparent bluish-green monoclinic and rhombic crystals. When the concentrated solution on filtering is allowed to drop into an equal bulk of alcohol, or, as directed by the British Pharmacopœia, well agitated with a smaller quantity of alcohol, and the precipitate rinsed with some diluted alcohol, it forms a pale green crystalline powder, which is more permanent in the air than the large crystals. It has a specific gravity of 1.9, a styptic taste, a slight acid reaction, and when exposed to the air effloresces and is gradually oxidized. It dissolves at 10° C. (50° F.) in 1.64, at 30° C. (86° F.) in 0.7, and at 100° C. (212° F.) in 0.3 parts of water. It is insoluble in alcohol and ether. The aqueous solution yields a white precipitate with barium chloride, a dark blue one with potassium ferri-cyanide, and a bluish-white one with potassium ferrocyanide.

Tests.—Impurities are rarely present if the salt has been prepared from iron and sulphuric acid. The aqueous solution treated with hydrosulphuric acid should not give a blackish precipitate (copper, etc.), and when completely precipitated by sulphhydrate of ammonium, the filtrate on evaporation and ignition should leave no residue (magnesium, alkalies). The aqueous solution, after being oxidized with nitric acid and supersaturated with ammonia, should yield a filtrate which is not affected by sulphuretted hydrogen (zinc, manganese); and if the oxidized liquid is supersaturated with potassa solution, the filtrate neutralized with hydrochloric acid and again supersaturated with ammonia, no precipitate (alumina) should occur.

Preparation for Homœopathic Use.—The pure sulphate of iron is prepared by trituration, as directed under Class VII.

FILIX MAS.

Synonyms, *Aspidium Filix Mas*, Swartz. *Polypodium Filix Mas*, Linn.

Nat. Ord., Filicales.

Common Name, Male Fern.

The male fern has a perennial, horizontal root or rhizome, from which numerous annual fronds or leaves arise, forming tufts from a foot to four feet in height. The stipe or footstalk, and midrib are thickly beset with brown, tough, transparent scales; the frond itself is oval-lanceolate, acute, pinnate, and of a bright green color. The pinnæ or leaflets are remote below, approach more nearly as they ascend, and run together at the summit of the leaf. They are deeply divided into lobes, which are of an oval shape, crenate at the edges, and gradually diminish from the base of the pinna to the apex. The fructification is in small dots on the back of each lobe, placed in two rows near the base, and distant from the edges. The plant is a native of Europe, Asia, and the north of Africa. It is said also to be indigenous, growing in shady pine forests from New York to Virginia.

Preparation.—The fresh main root, gathered in July or August, is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, pour it into a well-stoppered bottle, and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{3}$.

Dilutions must be prepared as directed under Class III.

FORMICA RUFA.

Class, Insecta.

Order, Hymenoptera.

Family, Formicariæ.

Common Names, Ant. Wood-ant. Red-ant. Pismire.

The ants are found most frequently in pine forests. Their characters are: a flattened, rust-colored chest; black head; a big, oval abdomen, attached to the corslet by a pedicle which bears a small scale or vertical knot; antennæ filiform and broken; antennulæ of unequal size; mandibles strong; tongue truncated, concave, short. There are male, female, and neuter ants. The two former, when fully developed, have four long, white, transparent wings; they leave the hills, fly in the air and there couple; the males die shortly after, the females return to the hills. Only a few of them are admitted, which lay eggs and are taken care of by the neuters as among the bees. The females and neuters have, at the extremity of their abdomen, two glands, by means of which they secrete a peculiar liquor which is acid, and which, on a fine delicate skin, creates itching and eruptions.

Preparation.—The live insect is crushed, covered with five parts by weight of alcohol, and allowed to remain eight days, in a well-stop-

pered bottle, in a dark, cool place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{15}$.

Dilutions must be prepared as directed under Class IV.

FRAGARIA VESCA, *Linn.*

Synonyms, *Fragulæ*. *Trifolii Fragiferi*.

Nat. Ord., *Rosaceæ*.

Common Name, Wood-Strawberry.

This perennial plant grows in woods, meadows, fields and hills, over the whole of Europe, and a great portion of America. The root is brown, horizontal, with long, creeping sprouts that take root again; stem erect, round, hairy, of the length of a finger or more; leaves ternate, plicated, petiolated, downy on the upper surface and hairy on the lower; flowers white, inodorous; berry oval, red, of a delicious odor and exquisite taste.

Preparation.—The ripe berries are crushed to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well pour it into a well-stoppered bottle, and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{4}$.

Dilutions must be prepared as directed under Class III.

FRASERA CAROLINENSIS, *Walter*.

Synonyms, *Frasera Walteri*, *Micheaux*. *Swertia Difformis*.

Nat. Ord., *Gentianaceæ*.

Common Names, American Columbo. Indian Lettuce.

This is among our most elegant indigenous plants, and the only one of its genus. From the root, which is triennial, long, spindle-shaped, horizontal, fleshy and yellow, a strong, succulent, solid, smooth stem rises, from five to ten feet in height. The leaves are sessile, entire glabrous, of a deep green color, and disposed in whorls, which commence at the root and ascend to the summit with successively diminishing intervals. The radical leaves, from five to twelve in number, are elliptical, obtuse, a foot or more in length by about four inches in breadth, and lie upon the ground in the form of a star. Those constituting the whorls are successively smaller as they ascend; the lowest oblong-lanceolate, the upper lanceolate and pointed. The flowers are numerous, large, yellowish-white and disposed in a beautiful terminal pyramidal panicle, from one to five feet long, the branches of which spring from the axils of the upper leaves. The segments of the calyx are lanceolate, acute and somewhat shorter than those of the corolla. The filaments are inserted into the base of the corolla, between its segments, which they do not equal in length. The anthers are oblong and notched at the base. The germ is oblong-ovate, compressed, and gradually tapers into the style, which ends in a bifid stigma. The fruit is an oval,

acuminate, compressed, two-valved, one-celled, yellow capsule, containing from eight to twelve flat elliptical seeds. The *frasera* flourishes in the southern and western portions of the United States, and in many situations is very abundant, especially in Arkansas and Missouri. It prefers rich woodland and moist meadows. The period of flowering is from May to July; but the stems and flowers are produced only in the third year, the radical leaves being the only part of the plant which previously appears above ground.

Preparation.—The fresh two year old root, gathered in October or November, or the three year old root, gathered in March or April, is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, pour it into a well-stoppered bottle, and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, †.

Dilutions must be prepared as directed under Class III.

FUCUS VESICULOSUS, *Linn.*

Synonym, *Quercus Marina*.

Nat. Ord., *Algæ*.

Common Names, Sea-wrack. Bladder-wrack. Sea-kelp.

The following is the generic character: "Male. *Vesicles* smooth, hollow, with villose hairs within, interwoven. Female. *Vesicles* smooth, filled with jelly, sprinkled with immersed grains, prominent at tip. Seeds solitary." This sea-weed is perennial, with the frond or leaf flat, smooth and glossy, from one to four feet long, from half an inch to an inch and a half broad, furnished with a midrib throughout its length, dichotomous, entire upon the margin, and of a dark, olive-green color. Small spherical vesicles, filled with air, are immersed in the frond near the midrib. The air in these vesicles has not the exact composition of atmospheric air, consisting, according to the analysis of M. Ernest Baudrimont, in one instance of 28.4 per cent. of oxygen and 71.6 of nitrogen, in another 26.5 of the former and 73.5 of the latter. The fruit consists of roundish, compressed receptacles, at the ends of the branches, filled with a clear tasteless mucus. The plant grows upon the shores of Europe and of this continent, attaching itself to the rocks by its expanded woody root. It has a peculiar odor, and a nauseous saline taste.

Preparation.—The fresh alga, gathered in May or June, is pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, and having poured it into a well-stoppered bottle, it is allowed to stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, †.

Dilutions must be prepared as directed under Class III.

GALIUM APARINE, *Linn.*

Nat. Ord., Rubiaceæ.

Common Names, Cleavers. Goose-grass. Poor Robin. Savoyan.

This plant is indigenous to Europe, Asia, and North America. The stem is one to five feet long, weak, straggling, often forming matted masses, very rough, bristle-prickly backwards, hairy at the joints; leaves six to eight in a whorl, lanceolate, tapering to the base, short-pointed, rough on the margins and midrib, from one to two inches long. Cymes usually three-flowered, flowers white; fruit (large) bristly with hooked prickles, purplish, dry or fleshy, globular, twin, separating when ripe into the two seed-like, indehiscent, one-seeded carpels. Flowers appear in June and July.

Preparation.—The fresh herb, in flower, is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, pour it into a well-stoppered bottle, and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

GAMBOGIA.

Synonyms, Gummi Guttæ. Catharticum Aureum.

Nat. Ord., Guttiferæ.

Common Name, Gamboge.

A gum-resin obtained from *garcinia morella* (*Desrousseaux*) var. *pedicellata*.

The tree is medium-sized, with glossy laurel-like leaves, and small, yellow dioecious flowers, the pistillate ones being on short pedicles. It is indigenous to Siam, Cambodia and Cochin China. Flückiger and Hanbury observed that the milky juice is secreted in ducts, which are principally located in the middle bark, to a less extent in the dotted vessels of the alburnum and in the pith. Gamboge is obtained from incisions made into the bark, the yellow latex being collected in the joint of a bamboo, where it is allowed to harden.

Gamboge is in cylindrical, straight or bent sticks, six to eight inches long and one to two inches in diameter, called pipes; the surface is striated longitudinally from impressions of the bamboo, and occasionally contains some splinters of it. Gamboge breaks easily, with a flat, conchoidal, smooth fracture, of a deep orange-red tint and a resinous lustre; thin splinters are slightly translucent. It yields a light yellow powder, and on being triturated with water a uniform bright yellow emulsion is readily obtained. It is inodorous, but the dust is sternutatory, and it has a disagreeable acrid taste. Inferior qualities of pipe gamboge are of a brown or gray tint, harder, of a dull earthy or irregular fracture, and less inclined to produce a uniform emulsion.

Cake gamboge has been collected in flat vessels, and is met with in

irregular lumps, which otherwise resemble pipe gamboge, but are more liable to be adulterated.

Preparation.—One part by weight of pure gamboge is dissolved in five parts by weight of alcohol.

Amount of drug power, $\frac{1}{16}$.

Dilutions must be prepared as directed under Class IV.

GELSEMIUM.

Synonyms, *Gelsemium Sempervirens*, *Niton*. *Gelsemium Nitidum*, *Micheaux*. *Bignonia Sempervirens*, *Linn*.

Nat. Ord., Loganiaceæ.

Common Name, Yellow Jasmine.

The *yellow jasmine* is one of the most beautiful climbing plants of our Southern States, ascending lofty trees and forming festoons from one tree to another, in its flowering season, in the early spring, scenting the atmosphere with its delicious odor. The stem is twining, smooth and shining; the leaves perennial, opposite, shortly petiolate, lanceolate, entire, dark green above and paler beneath; the flowers in axillary clusters, large, of a deep yellow color, and fragrant, with a very small, five-leaved calyx, and a funnel-shaped corolla, having a spreading, five-lobed, nearly equal border. The fruit is a flat, compressed capsule, divisible into two parts, two-celled, and furnished with flat seeds, which adhere to the margins of the valves. The plant grows in rich, moist soils along the seacoast from Virginia to the south of Florida. The flowers are said to be poisonous.

Preparation.—Pieces of the fresh root, not thicker than a goose-quill, are chopped and weighed. Then two parts by weight of alcohol are taken, and after thoroughly mixing with one-sixth part of it, the rest of the alcohol is added. After stirring the whole well, put it into a wide-mouthed bottle, and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{4}$.

Dilutions must be prepared as directed under Class III.

GENTIANA CRUCIATA, *Linn*.

Synonym, *Gentiana Minoris*.

Nat. Ord., Gentianaceæ.

Common Name, Cross-Wort Gentian.

Stem two to twelve inches high. Leaves oblong lanceolate, three-nerved, at base, connected sheath-like. Flowers in dense corymbs, the topmost sessile, compressed like a bud. Calyx bell-shaped, corolla ovoid tubular, light blue within, and outside greenish-blue. Is found on dry hills, and especially on calcareous soil. Flowers in July and September.

Preparation.—The fresh root is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, pour it into

a well-stoppered bottle, and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

GENTIANA LUTEA, Linn.

Synonyms, *Gentiana Majoris.* *Gentiana Rubra.*

Nat. Ord., *Gentianaceæ.*

Common Names, *Bitter-Wort Gentian.* *Yellow Gentian.*

Yellow Gentian is among the most remarkable of the species which compose this genus, both for its beauty and great comparative size. From its thick, long, branching, perennial root, an erect, round stem rises to the height of three or four feet, bearing opposite, sessile, oval, acute, five-nerved leaves of a bright green color, and somewhat glaucous. The lower leaves, which spring from the root, are narrowed at their base into the form of a petiole. The flowers are large and beautiful, of a yellow color, peduncled, and placed in whorls at the axils of the leaves. The calyx is monophyllous, membranous, yellowish, and semi-transparent, splitting when the flower opens, and reflected when it is fully expanded; the corolla is rotate, and deeply divided into five or six lanceolate, acute segments; the stamens are five or six, and shorter than the corolla. This plant grows among the Apennines, the Alps, the Pyrenees, and in other mountainous or elevated regions of Europe.

Preparation.—The fresh root is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, pour it into a well-stoppered bottle, and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

GERANIUM MACULATUM, Linn.

Synonym, *Geranium Putillum.*

Nat. Ord., *Geraniaceæ.*

Common Names, *Cranesbill.* *Geranium.* *Tormentilla.*

This plant has a perennial, horizontal, fleshy root, which is furnished with short fibres, and sends up annually an herbaceous stem, with several radical leaves. The stem is erect, round, dichotomously branched, from one to two feet high, of a grayish-green color, and thickly covered in common with the petioles and peduncles, with reflexed hairs. The leaves are deeply divided into three, five or seven lobes, which are variously incised at their extremities, hairy, and of a pale green color, mottled with still paler spots. Those which rise from the root are supported on footstalks eight or ten inches long; those of the stem are opposite, the lower petiolate, the upper nearly sessile, with lanceolate

or linear stipules. The flowers are large, and usually of a purple color. The peduncles spring from the forks of the stem, and severally support two flowers upon short pedicels. The calyx is composed of five oblong, ribbed, cuspidate leaves; the petals are five, obovate, and entire; the stamens ten, with oblong, deciduous anthers, the five alternate filaments being longer than the others, and having glands at their base; the germ is ovate, supporting a straight style as long as the stamens, and surmounted by five stigmas. The fruit consists of five aggregate, one-seeded capsules, attached by a beak to the persistent style, curling up and scattering the seeds when ripe. The cranesbill is indigenous, growing throughout the United States, in moist woods, thickets, and hedges, and generally in low grounds. It flowers from May to July.

Preparation.—The fresh root, gathered in autumn, is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, pour it into a well-stoppered bottle, and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

GERANIUM ROBERTIANUM, Linn.

Synonym, Geranium Inodorum.

Nat. Ord., Geraniaceæ.

Common Name, Herb-Robert.

This plant is indigenous to Europe and North America, growing in moist woods and shaded ravines. It is glabrous or slightly hairy, fetid, reddish. Leaves three-divided or pedately five-divided, the divisions twice pinnatifid; the leaves are from one to three inches broad; petioles half an inch to one inch long; stipules ovate. Flowers half an inch in diameter, sepals awned, shorter than the (red-purple) petals; calyx angular. Claw of petals glabrous. Carpels attached by silky hairs to the axils. Pods wrinkled; seeds smooth. Flowers appear from June to October.

Preparation.—The fresh plant, in flower, is chopped and pounded to a pulp and pressed out *lege artis* in a piece of new linen. The expressed juice is then, by brisk agitation, mingled with an equal part by weight of alcohol. This mixture is allowed to stand eight days in a well-stoppered bottle in a dark, cool place and then filtered.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class I.

GINSENG.

Synonyms, Panax Quinquifolium, Linn. Aralia Quinquifolia.

Nat. Ord., Araliaceæ.

Common Names, Ginseng. Tartar Root. Five Fingers.

This plant is a native of America, China, Tartary, etc.; its root is fleshy, somewhat spindle-shaped, from one to three inches long, about as thick as the little finger, and terminated by several slender fibres. The root sends up annually a smooth round stem, about a foot high, and divided at the summit into three leafstalks, each of which supports a compound leaf, consisting of five, or, more rarely, of three or seven petiolate, oblong-ovate, acuminate, serrate leaflets. The flowers are small, greenish, and disposed in a simple umbel, supported by a peduncle which rises from the top of the stem in the centre of the petioles. The fruit is a kidney-shaped, scarlet berry, crowned with the styles and calyx, with two and sometimes three seeds. The root, when dry, is yellowish-white and wrinkled externally, and within consists usually of a hard central portion, surrounded by a soft whitish bark. It has a feeble odor, and a sweet, slightly aromatic taste, somewhat analogous to that of liquorice root.

Preparation.—The genuine, dried root, finely powdered, is covered with five parts by weight of alcohol, and allowed to stand eight days in a well-stoppered bottle in a dark, cool place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{16}$.

Dilutions must be prepared as directed under Class IV.

GLONINUM.

Synonyms, Nitroglycerinum. Glonoin. Glonoine.

Common Name, Nitroglycerin.

Formula, $C_3H_5(NO_2)_3O_3$.

Molecular Weight, 227.

Preparation of Glonoin.—Nitroglycerin was discovered by Sobrero (1847), and is at the present time prepared on a large scale by slight modifications of the process proposed by the discoverer and by E. Kopp. To about seven pounds of a mixture, composed of one part of nitric acid, sp. gr. 1.47, and two parts of strong sulphuric acid, one pound of glycerin is slowly added, with frequent stirring, with the precaution of preventing the temperature from rising above 26.6° C. (80° F.). The mixture is then poured into a large quantity of water, and the oily sediment well washed with a diluted solution of alkali and of water.

Properties.—Nitroglycerin is a colorless or pale yellowish oily liquid, having the density 1.60 at 15° C. (59° F.), and, when exposed to a low temperature, crystallizes in long needles. It is without odor, but its vapors produce intense headache; its taste is sweet, and pungently aromatic. When ignited in the open air, it burns quietly and incompletely; but when heated in closed vessels, or by percussion, it explodes with great violence. On keeping, it is gradually decomposed, oxalic acid being formed, besides nitrous acid and other gases, from the pressure of which explosions are apt to occur. Nitroglycerin forms the basis of various blasting compounds known as *dynamite*, *glyoxilin*, *dualin*, etc. It is nearly insoluble in water, but dissolves freely in ether, alcohol, and methylic alcohol; these solutions will likewise explode by percussion with a wet hammer.

Preparation for Homœopathic Use.—One part by weight of pure nitroglycerin is dissolved in nine parts by weight of 95 per cent. alcohol.

Amount of drug power, $\frac{1}{16}$.

NOTE.—If the $\frac{1}{16}$ solution is exposed to a temperature of less than 60° F., part of the Glonoin separates and falls to the bottom.

Dilutions must be prepared as directed under Class VI—*a*.

GLYCERINUM.

Synonyms, Glycerina. Glycerin.

Common Name, Glycerine.

Formula, $C_3 H_8 O_3$.

Molecular Weight, 92.

A sweet principle obtained from fat and fixed oils.

Origin.—Glycerin, which is not found in the free state, except in some rancid fats, exists in combination with the so-called fatty acids, forming compound ethers, which constitute most of the animal and vegetable, solid and liquid fats. It is found in small quantities during the fermentation of saccharine liquids. Scheele, who discovered it in 1779, called it *sweet principle of oils*. In the United States it was first manufactured in Philadelphia by Robert Shoemaker in 1846. At present it is extensively obtained by distillation in several cities, and in addition two million pounds are annually imported.

Preparation of Glycerin.—To obtain glycerin, fat must be decomposed into its proximate constituents, either by a caustic alkali, as in the manufacture of soap, by oxide of lead, as in the preparation of lead plaster, or by the action of water at an elevated temperature under high pressure. The latter process, which was patented in 1854 by R. A. Tilghman, yields the acids of the fat and an aqueous solution of glycerin. Water which has been agitated with recently prepared lead plaster is likewise such a solution, and the liquor from which soap has been separated contains glycerin, saline matters and various organic impurities, which may be removed by treatment with the necessary precipitants and with charcoal, the solutions being finally evaporated and distilled with steam under pressure.

Properties.—Glycerin is a syrupy liquid having the specific grav. 1.28 at 15° C. (59° F.) (Pelouze); the officinal glycerin has a density of 1.25. It is colorless, inodorous, very sweet, without action upon litmus, and soluble in all proportions in water and alcohol but not in ether. Its great affinity for water has been long known. W. Willmott (1879) ascertained that in a moist atmosphere about twice its bulk of water has been absorbed. Its boiling point is 290° C. (554° F.). At a red heat it takes fire and burns without leaving any residue.

Tests.—Glycerin is now rarely adulterated, but much being prepared for use in the arts, where purity is not necessary, impure glycerin may at all times be met with in the market. Water, mucilage, glucose, and perhaps cane-sugar syrup are sometimes used as adulterants. The first is detected by the specific gravity of the sample; the others by the brown color produced on mixing the sample with twice its bulk of

concentrated sulphuric acid. Since cane-sugar syrup which has been exposed to the light for some time, contains appreciable quantities of glucose, glycerin adulterated with either kind of sugar will yield a red precipitate when heated to boiling with a drop of solution of copper sulphate and an excess of potassa. The impurities may consist of saline matters, should the glycerin have not been distilled, or of odorous compounds if insufficiently purified by distillation. The odor becomes apparent on warming the glycerin or rubbing it well upon the hand. Most of these compounds reduce nitrate of silver and produce a more or less deep color when glycerin is diluted with a little distilled water, and after the addition of a few drops of nitrate of silver heated to boiling. The same reagent will detect chlorides by the white precipitate produced. Diluted glycerin should not be colored or rendered turbid on being tested with sulphuretted hydrogen or sulphhydrate of ammonium (metallic salts), ammonium oxalate (calcium), or barium chloride (sulphuric or oxalic acid).

Preparation for Homœopathic Use.—One part by weight of pure glycerin is dissolved in nine parts by weight of distilled water.

Amount of drug power, $\frac{1}{16}$.

Dilutions must be prepared as directed under Class V—*a*.

GNAPHALIUM POLYCEPHALUM, *Linn.*

Nat. Ord., Compositæ.

Common Names, Common Life-Everlasting. Indian Posey.

This erect annual, one to two feet high, grows in the fields and woods of North America. It is a woolly annual, with lanceolate nearly entire leaves, and with the numerous ovate and obovate flower-heads in dense corymbose clusters terminating the branches; the involucreal scales are dry, scarious, and whitish, the tubular florets yellowish. The plant is quite fragrant, and has a bitterish and aromatic taste. Flowers appear in summer and autumn.

Preparation.—The fresh plant is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, pour it into a well-stoppered bottle, and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{16}$.

Dilutions must be prepared as directed under Class III.

GOSSYPIUM HERBACEUM, *Linn.*

Synonym, *Lana Gossypii*.

Nat. Ord., Malvaceæ.

Common Name, Cotton Plant.

This is a biennial or triennial plant, with a branching stem from two to six feet high, and palmate hoary leaves, the lobes of which are somewhat lanceolate and acute. The flowers are pretty, with yellow petals,

having a purple spot near the claw. The leaves of the involucrel or outer calyx are serrate. The capsule opens when ripe, and displays a loose white tuft of long slender filaments, which surround the seeds, and adhere firmly to the outer coating. The plant is a native of Asia, but is cultivated in most tropical countries. It requires a certain duration of warm weather to perfect its seeds, and, in the United States, cannot be cultivated advantageously north of Virginia.

Preparation.—The fresh inner root-bark is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, pour it into a well-stoppered bottle, and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

GRANATUM.

Synonym, *Punica Granatum*, *Linn.*

Nat. Ord., Granateæ.

Common Name, Pomegranate.

This is a shrubby tree, attaining in favorable situations the height of twenty feet, with a very unequal trunk, and numerous branches which sometimes bear thorns. The leaves are opposite, entire, oblong, or lance-shaped, pointed at each end, smooth, shining, of a bright green color, and placed on short footstalks. The flowers are large, of a rich scarlet color, and stand at the ends of the young branches. The petals are roundish and wrinkled, and are inserted into the upper part of the tube of the calyx, which is red, thick, and fleshy. The fruit is globular, about the size of an orange, crowned with the calyx, covered with a reddish-yellow, thick, coriaceous rind, and divided internally into many cells, which contain an acidulous pulp, and numerous oblong, angular seeds. This tree grows wild upon both shores of the Mediterranean, in Arabia, Persia, Bengal, China and Japan, has been introduced into the East and West Indies, and is cultivated in all civilized countries, where the climate is sufficiently warm to allow the fruit to ripen. The roots of the pomegranate are hard, heavy, knotty, ligneous, and covered with a bark which is yellowish-gray or ash-gray on the outer surface, and yellow on the inner. As found in the shops, the bark is in quills or fragments, breaks with a short fracture, has little or no smell, colors the saliva yellow when chewed, and leaves in the mouth an astringent taste without disagreeable bitterness.

Preparation.—The dried root-bark, finely powdered, is covered with two parts by weight of dilute alcohol, and allowed to stand eight days in a well-stoppered bottle, in a dark, cool place, being shaken twice a day, and then pressed out *lege artis* in a piece of new linen and filtered.

Drug power of tincture, $\frac{1}{3}$.

Dilutions must be prepared as directed under Class I., except that

three parts of tincture are used to seven parts of dilute alcohol for the 1x dilution, and three parts to ninety-seven parts for the 1 dilution.

GRAPHITES.

Synonyms, Plumbago. Carbo Mineralis. Carburetum Ferri. Cerussa Nigra.

Common Name, Black Lead.

Graphite is a mineral carbon. It is found in the greatest purity in the mine of Borrowdale, England; but it also occurs very pure in this country, especially near Bustleton in Pennsylvania. It crystallizes in hexagonal plates varying in specific gravity between 1.8 and 2.5. It is a blackish-gray, shining substance, soft and greasy to the touch, inodorous, and a good conductor of electricity. It was formerly supposed to be a carburet of iron, but as very pure specimens are nearly free from iron, it must be deemed an accidental impurity.

To prepare graphite for medical use, it must be boiled for an hour in a sufficient quantity of distilled water, after which the fluid is to be decanted and the graphite to be digested in a solution of equal parts of sulphuric and hydrochloric acids, diluted with twice their volume of water. After repeatedly stirring the mixture for twenty-four hours, decant the fluid, wash the residue with distilled water and dry it. Because of the extraordinary fineness and flexibility of its scaly crystals it resists even the most continual trituration, which has lasted for hours, and shows permanently not inconsiderable portions of shining points. To obviate this, the best means is to triturate the purified graphite in small portions with coarsely powdered sugar of milk, adding as much water, in a roomy porcelain dish, as is necessary to make the whole into a thick paste. This rubbing is to be continued until the water has evaporated and the mass begins to form little lumps. Boiling hot distilled water is then poured over the whole to dissolve the sugar of milk and to separate the coarser from the finer particles of graphites. This graphite is washed repeatedly and dried.

Preparation.—The purified graphite, made as described above, is prepared by trituration, as directed under Class VII.

GRATIOLA.

Synonyms, Gratiola Officinalis, *Linn.* Centauroidis. Digitalis Minima.

Nat. Ord., Scrophulariaceæ.

Common Name, Hedge-Hyssop.

This plant, growing in Central and Southern Europe, near the borders of rivers, lakes and water ditches, also on moist meadows, has a creeping, articulate, on the joints fibrillous root, as thick as a quill and whitish; the stem, one half to one and a half feet high, is erect, little branched, above four-sided. It has opposite, sessile, lanceolate, finely serrate, three-nerved leaves, and solitary axillary whitish or reddish two-lipped flowers, with yellow hairs in the tube. The whole plant is

smooth, pale green, inodorous, and has a very bitter, somewhat acrid, taste.

Preparation.—The fresh plant, gathered before flowering, is chopped and pounded to a pulp and pressed out *lege artis* in a piece of new linen. The expressed juice is then, by brisk agitation, mingled with an equal part by weight of alcohol. This mixture is allowed to stand eight days in a well-stoppered bottle, in a dark, cool place, and then filtered.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class I.

GRINDELIA ROBUSTA, Nuttall.

Nat. Ord., Compositæ.

Common Name, Grindelia.

This is a polymorphous species, very smooth, pale, usually stout, with the leaves varying from broadly spatulate or oblong to lanceolate, the upper ones being often clasping, with a heart-shaped base; obtuse at the apex, and more or less sharply serrate. The akenes are from one to three-toothed at the apex, and have two or three, rarely five, awns for the pappus. The variety *latifolia* is the robust and broad-leaved form, the leaves being often three to four inches long. The variety *angustifolia* has rather fleshy and narrower leaves, the upper ones being nearly entire, and all narrowed at the base. The variety (?) *rigida* is more glutinous, the leaves rigid and coriaceous, some of them sharply serrate. All these plants have the tips of the involucreal scales at length rigidly spreading. The plant is common along the Pacific coast and inland on the mountains. The plant has a balsamic odor, and a pungently aromatic and bitterish taste.

Preparation.—The fresh herb, in flower, is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and, having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, pour it into a well-stoppered bottle, and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

GRINDELIA SQUARROSA, Dunal.

Nat. Ord., Compositæ.

Common Name, Grindelia.

G. Squarrosa, which is not recognized as a distinct species in the flora of California, is found from Arctic America southward to California, Texas and Nebraska, and is very common on the plains. It is glabrous and viscidly resinous; the leaves rather rigid, glaucous and punctate, varying between spatulate-lanceolate and oblong, the upper ones sessile, partly clasping, rather obtuse, and finely toothed; the involucreal scales with very long reflexed, squarrose, subulate points.

Preparation.—The fresh herb, in flower, is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, pour it into a well-stoppered bottle, and let it stand eight days, in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

GUACO.

Synonym, *Mikania Guaco*, *Humboldt* and *Bonpland*.

Nat. Ord., *Corymbiferae*.

Common Name, *Mikania Guaco*.

This plant is a native of intertropical America, and has been introduced into the West India Islands from the continent. It has twining stems, with round, sulcate, and hairy branches; ovate, subacuminate, remotely dentate leaves, somewhat narrowed at the base, rough above, and hairy beneath; and flowers in opposite axillary corymbs. The leaves, when fresh, have a strong disagreeable odor, and a bitter taste; but their sensible properties and medical virtues are impaired by drying.

Preparation.—The fresh leaves are chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, pour it into a well-stoppered bottle, and let it stand eight days, in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

GUAIAIACUM.

Synonyms, *Guaiaicum Officinale*, *Linn.* *Lignum Vitæ*. *Palus Sanctus*.

Nat. Ord., *Zygophyllaceæ*.

Common Name, *Guaiaic*.

This a large tree, of very slow growth. When of full size it is from forty to sixty feet high, with a trunk four or five feet in circumference. The branches are knotted, and covered with an ash-colored striated bark. That of the stem is of a dark gray color, variegated with greenish or purplish spots. The leaves are opposite and abruptly pinnate, consisting of two, three, and sometimes four pairs of leaflets, which are obovate, veined, smooth, shining, dark green, from an inch to an inch and a half long, and almost sessile. The flowers are of a rich blue color, stand on long peduncles and grow to the number of eight or ten at the axils of the upper leaves. The seeds are solitary, hard, and of an oblong shape. The tree grows in the West Indies, particularly in Hayti

and Jamaica. The resin obtained from the stem by natural exudation, incisions or heat, is in masses of a deep greenish-brown or dark olive color on their external surface, and internal wherever the air can penetrate. The predominant hue of those parts not exposed to the air is reddish-brown or hyacinthine, diversified, however, with shades of various colors. The odor is feeble but fragrant, and is rendered stronger by heat. The taste, which is at first scarcely perceptible, becomes acrid after a short period; and a permanent sense of heat and pungency is left in the mouth and fauces.

Preparation.—Two parts by weight of the resin are dissolved in nine parts by weight of alcohol and then filtered.

Drug power of tincture, $\frac{1}{16}$.

Dilutions must be prepared as directed under Class VI—*a*.

GUANO AUSTRALIS.

Common Name, Guano.

Origin.—Guano consists of the partially decomposed excrements of the penguin and other sea-birds, which congregate in large numbers on the barren and uninhabited islands on the western coast of South America, and in other localities. It is principally exported from the islands off the coast of Peru.

Description.—It is in the form of crystalline or amorphous masses, or more frequently of an irregular powder having a grayish or pale brown color, and an offensive, usually ammoniacal odor. Its specific gravity is about 1.64; its reaction is mostly alkaline, though occasionally acid. It contains hygroscopic water varying between six and twenty per cent., which is expelled by the heat of a water bath; when exposed to a higher temperature it blackens and burns, leaving a white ash varying in amount between twenty-five and thirty-eight per cent.

Preparation.—The guano, obtained as fresh as possible, is prepared by trituration, as directed under Class VII.

GUARANA.

Synonym, *Paullinia Sorbilis*, *Martius*.

Nat. Ord., Sapindaceæ.

Common Name, Brazilian Cocoa.

Paullinia sorbilis is a climbing shrub, with pinnate leaves, composed of five oval-oblong toothed leaflets; small flowers in narrow spicate panicles, and pyriform beaked capsules containing one to three shiny blackish-brown subglobular seeds. It is indigenous to the northern and western provinces of Brazil. The dry seeds are powdered, moistened by water or by exposure to the dew, and then kneaded into a kind of stiff paste, which is formed into globular or cylindrical masses; these are well dried by a fire, or by exposure to the sun. Guarana is met with in subglobular, cylindrical or elliptic cakes, which have an uneven surface, are hard, of a reddish-brown color, somewhat lighter internally, and breaking with an uneven, slightly glossy fracture. It has a peculiar slight odor, and an astringent and bitter taste.

Preparation.—The dried paste made from the seeds, as described above, is covered with five parts by weight of alcohol, and allowed to remain eight days in a well-stoppered bottle in a dark, cool place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{16}$.

Dilutions must be prepared as directed under Class IV.

GUAREA TRICHILIOIDES, *Linn.*

Nat. Ord., Meliaceæ.

Common Names, Ball-Wood. Red-Wood.

This medium sized tree grows in Dominica, St. Vincent, and Guadeloupe.

Calyx four-toothed or four-lobed. Petals oblong, two to three inches long, imbricative. Stameneal tube quite entire. Anthers sessile, internally, near its mouth. Ovary four-celled; cells one-ovulate or two-ovulate, with the ovules superimposed. Pericarp woody, at length loculicidal. Leaves abruptly pinnate; the pairs appearing successively along the petiole; panicles simply racemiform-axillary.

Preparation.—The bark is finely powdered and covered with five parts by weight of alcohol, and then poured into a well-stoppered bottle, and allowed to remain eight days in a dark, cool place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{16}$.

Dilutions must be prepared as directed under Class IV.

GYMNOCLADUS CANADENSIS, *Lamarch.*

Synonym, Guilandin Dioica.

Nat. Ord., Leguminosæ.

Common Names, American Coffee-Tree. Chicot. Kentucky Coffee Tree.

This is a tall, large tree, growing in rich woods, along rivers, from Western New York and Pennsylvania to Illinois and southwestward. It is also cultivated as an ornamental tree. Leaves are two to three feet long, with several large partial leafstalks, bearing seven to thirteen ovate stalked leaflets, the lowest pair with single leaflets. Flowers are whitish, in terminal racemes. Pod, which is from six to ten inches long, and about two inches broad.

Preparation.—The fresh pulp of the fruit is pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, pour it into a well-stoppered bottle, and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Amount of drug power, $\frac{1}{6}$.

Dilutions must be prepared as directed under Class III.

HÆMATOXYLON.

Synonyms, *Hæmatoxylon Campechianum*, *Linn.* *Signum Cam-pescanum*.

Nat. Ord., Leguminosæ.

Common Names, Logwood. Peachwood.

This is a tree of middle size, usually not more than twenty-four feet high, though, under favorable circumstances, it sometimes rises forty or fifty feet. The trunk, seldom exceeding twenty inches in diameter, is often very crooked, and is covered with a dark, rough bark. The branches are also crooked, with numerous smaller ramifications, which are beset with sharp spines. The sapwood is yellowish, but the interior layers are of a deep red color. The leaves are alternate, abruptly pinnate, and composed of three or four pairs of sessile, nearly obcordate, obliquely nerved leaflets. The flowers, which are in axillary spikes or racemes near the ends of the branches, have a brownish-purple calyx and lemon-yellow petals. Calyx five-parted. Petals five. Capsule lanceolate, one-celled, two-valved, with the valves boat-form. The flowers exhale an agreeable odor, said to resemble that of the jonquil. The tree is a native of Campeachy, the shores of Honduras Bay, and other parts of tropical America. The wood has a slight peculiar odor, and a sweet, somewhat astringent taste.

Preparation.—The best Campeachy logwood, in fine chips, is covered with five parts by weight of alcohol, and allowed to remain eight days, in a well-stoppered bottle, in a dark, cool place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{10}$.

Dilutions must be prepared as directed under Class IV.

HAMAMELIS.

Synonym, *Hamamelis Virginica*, *Linn.* *Trilopus Dentata*.

Nat. Ord., Hamamelaceæ.

Common Name, Witch-Hazel.

The witch-hazel is a shrub, from six to ten feet high, growing in damp woods and thickets in Canada and the United States. It has a rather crooked stem with flexuose branches, which are covered with a smooth brown bark, the older bark being dark gray and somewhat fissured, and internally whitish and smooth. The leaves are alternate, about four inches long, oval or obovate, slightly heart-shaped at the base, wavy-toothed on the margin, and, at least when young, stellately pubescent. The flowers are in clusters of three or four, with an involucre of three ovate leaflets, have a four-cleft calyx and four long linear, greenish-yellow petals, and appear in September and October, the nut-like two-celled and two-beaked capsule containing two black oily edible seeds, not ripening until September of the next year.

Preparation.—The fresh bark of the twigs and root is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and, having mixed the pulp thoroughly with one-

sixth part of it, the rest of the alcohol is added. After having stirred the whole well, pour it into a well-stoppered bottle, and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, †.

Dilutions must be prepared as directed under Class III.

HEKLA LAVA.

Dr. Garth Wilkinson, of London, states in a letter to Dr. Wm. H. Holcombe, of New Orleans:

"Its known pathological effects on the sheep in the vicinity of Hekla are immense exostoses of the jaws.

"The finer ash, which fell on the pastures in distant localities, was particularly deleterious, while the grass ash near the mountain was inert.

"These accounts are from a Danish account of the eruptions of Hekla and their consequences to nature, to man, beast and vegetable. Hekla lava, according to Prof. Morris, of University College, London, has for general constituents, combinations of silica, alumina, lime, magnesia, with some oxide of iron; sometimes it contains anarthite and other minerals." (Vide. Tr. Am. Inst., 1870, p. 441.)

Preparation.—For homœopathic use the above-mentioned fine ash is triturated according to Class VII.

HEDEOMA.

Synonyms, Hedeoma Pulegioides, *Persoon*. Cunila Pulegioides, *Linn.* Melissa Pulegioides. Ziziphora Pulegioides.

Nat. Ord., Labiatae.

Common Names, American Pennyroyal. Squaw Mint. Tickweed.

This is an indigenous annual plant, from nine to fifteen inches high, with a small, branching, fibrous, yellowish root, and a pubescent stem, which sends off numerous slender erect branches. The leaves are opposite, oblong-lanceolate or oval, nearly acute, attenuated at the base, remotely serrate, rough or pubescent, and prominently veined on the under surface. The flowers are very small, pale blue, supported on short peduncles, and arranged in axillary whorls along the whole length of the branches. The plant is common in all parts of the United States, preferring dry grounds, and, where abundant, scenting the air for a considerable distance with its grateful odor.

Preparation.—The fresh plant is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and, after thoroughly mixing the pulp with one-sixth part of it, the rest of the alcohol is added. After having been stirred, it is poured into a well-stoppered bottle, and allowed to stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, †.

Dilutions must be prepared as directed under Class III.

HEDYSARUM ILDEFONSIANUM, Nobis.**Synonym,** Carapicho.**Nat. Ord.,** Leguminosæ.**Common Name,** Brazilian Burdock.

This plant is a native of Brazil. The brownish and ligneous stem is about three feet high; it is ramose, pubescent, especially above. Leaves alternate, pinnate, trifoliate; folioles oval and slightly tomentose, on a hairy, bistipulate petiole. The flowers which are small and seated on filiform, unifloral peduncles, form loose, terminal spikes. Fruit oval, hairy, on bent peduncles, attaching itself very intimately to clothes and to the hairy skin of animals, on which account the Brazilians call it "barba de boi."

Preparation.—The dried leaves are finely pulverized and weighed, covered with five parts by weight of alcohol, and allowed to remain eight days in a well-stoppered bottle, at an ordinary temperature, in a dark place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{10}$.

Dilutions must be prepared as directed under Class IV.

HELIANTHUS.**Synonym,** Helianthus Annuus, *Linn.***Nat. Ord.,** Compositæ.**Common Name,** Sunflower.

The sunflower is indigenous to tropical America, and cultivated in most civilized countries, in many of which it has become naturalized or grows spontaneously. It has a straight stem from ten to fifteen feet high, which contains a large white pith. The leaves are alternate, petiolate, ten inches long, broadly ovate or heart-shaped, three-ribbed, serrate and rough. The flower-heads are from eight to twelve inches in diameter, with bright yellow ligulate ray-florets, and a flat, brownish disk. The akenes are obovate-oblong, somewhat quadrangular, flattened, varying in color between whitish and black, at the base embraced by the chaff and crowned with a very deciduous pappus of two chaffy scales.

Preparation.—The ripe seeds, finely powdered, are covered with five parts by weight of dilute alcohol, and allowed to remain eight days in a well-stoppered bottle in a dark, cool place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{10}$.

Dilutions must be prepared as directed under Class IV, except that the 2x and 3x, and the 1 and 2 require dilute alcohol.

HELLEBORUS.**Synonyms,** Helleborus Niger, *Linn.* Melanpodium. Veratrum Nigrum.**Nat. Ord.,** Ranunculacææ.**Common Names,** Black Hellebore. Christmas Rose.

The root or rhizome of the black hellebore is perennial, knotted, blackish on the outside, white within, and sends off numerous long, simple, depending fibres, which are brownish-yellow when fresh, but become dark brown upon drying. The leaves are pedate, of a dark green color, and stand on long foot-stalks which spring immediately from the root. Each leaf is composed of five or more leaflets, one terminal, and two, three or four on each side, supported on a single partial petiole. The leaflets are ovate-lanceolate, smooth, shining coriaceous and serrated above. The flower-stem, which also rises from the root, is six or eight inches high, round, tapering, and reddish towards the base, and bears one or two large, pendant, rose-like flowers, accompanied with floral leaves, which supply the place of the calyx. The petals, five in number, are large, roundish, concave, spreading, and of a white or pale rose color, with occasionally a greenish tinge. It is a native of the mountainous regions of southern and temperate Europe, being found in Greece, Austria, Italy, Switzerland, France and Spain. It is cultivated in gardens for the beauty of its flowers, which expand in the middle of winter, on this account having been given the name of *Christmas rose*.

Preparation.—The root, gathered immediately after the period of flowering, is cautiously dried and powdered, covered with five parts by weight of alcohol, and allowed to remain eight days in a well-stoppered bottle, in a dark, cool place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{16}$.

Dilutions must be prepared as directed under Class IV.

HELONIAS DIOICA, *Pursh*.

Synonyms, *Chamælorium Luteum, Gray.* *Veratrum Luteum, Linn.* *Chamælorium Carolinianum, Willd.* *Helonias Lutea, Aiton.*

Nat. Ord., Melanthaceæ.

Common Names, Blazing Star. Starwort. False Unicorn.

The plant is indigenous to Canada and the United States, where it grows in low grounds west of the Mississippi. The herb is smooth, with a wand-like stem from a thick and abrupt tuberous rootstock, terminated by a long wand-like spiked raceme (four to nine inches long) of small bractless flowers; fertile plant more leafy than the staminate. Leaves are flat, lanceolate, the lowest spatulate, tapering into a petiole. Flowers dioecious. Perianth of six spatulate-linear (white) spreading sepals withering persistent. Filaments thread-like. Anthers two-celled, roundish, oval, yellow, extrorse: fertile flowers with rudimentary stamens. Styles linear-club-shaped, stigmatic along the inner side. Pod ovoid-oblong, not lobed, of a thin texture, loculicidally three-valved from the apex, many-seeded. Seeds linear-oblong, winged at each end. Flowers appear in June.

Preparation.—The fresh root, gathered just before flowering, is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After hav-

ing stirred the whole well, and poured it into a well-stoppered bottle, it is allowed to stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{4}$.

Dilutions must be prepared as directed under Class III.

HEPAR SULPHURIS CALCAREUM.

Synonyms, Calcareo Sulphuratum. Calx Sulphurata.

Common Names, Sulphuret of Lime. Hepar Sulphuris. Impure Calcic Sulphide.

Formula, Ca S.

Preparation of Hepar Sulphuris.—This must be prepared according to Hahnemann's direction, viz., by mixing equal parts of finely powdered and calcined oyster-shells and pure well-washed flowers of sulphur, placing them in a clay crucible, covered with a thick layer of moistened powdered chalk, and keeping the mixture at a white heat for at least ten minutes. When cold, open the crucible, and preserve the hepar in well-closed actinic bottles.

Properties and Tests.—Hepar sulphuris is in white porous friable masses, or a white, amorphous powder, having the odor of sulphuretted hydrogen, and a corresponding putrid taste; it is insoluble in cold water, soluble in hot hydrochloric acid with evolution of sulphuretted hydrogen. The solution gives a white precipitate with oxalate of ammonia.

Preparation for Homœopathic Use.—Hepar sulphuris, prepared as above, is triturated as directed under Class VII.

Though a solution or so-called tincture, made of one part hepar sulphuris with ninety-nine parts of dilute alcohol, has been recommended, it should not be relied on, as its strength is very uncertain.

HEPAR SULPHURIS KALINUM.

Synonym, Kalium Sulphuratum. Potassii Sulphuratum.

Common Names, Sulphurated Potash. Liver of Sulphur. Sulphuret of Potassium.

Preparation of Sulphuret of Potassium.—Take of sublimed sulphur, a troy ounce; carbonate of potassium, two troy ounces. Rub the carbonate of potassium, previously dried, with the sulphur, and heat the mixture gradually in a covered crucible until it ceases to swell and is completely melted. Then pour the liquid on a marble slab; when the mass is cold break it into pieces, and keep in a well-stoppered bottle protected from the light.

Properties.—Sulphuret of potassium, when recently made or well preserved in closed vessels, is in fragments, breaking with a shallow conchoidal fracture, and having a liver-brown color, which in contact with moisture changes to greenish or brownish-yellow. It has an alkaline reaction to test-paper, and an acrid taste. It yields with water a yellow solution which has the odor of sulphuretted hydrogen, and evolves it freely on the addition of hydrochloric or sulphuric acid, sul-

phur being at the same time deposited. After boiling the hydrochloric acid solution until the sulphuretted hydrogen has been expelled, the liquid, freed from sulphur by filtration, will yield a yellow precipitate with chloride of platinum, and a white precipitate with chloride of barium. Sulphuret of potassium should be perfectly soluble in water, and nearly so in alcohol. If not protected from contact with air, sulphuret of potassium first becomes greenish, and afterwards gray, being partly converted into carbonate through the carbonic acid of the air, and partly oxidized to hyposulphite, sulphite and sulphate, sulphur being at the same time liberated.

Tests.—The presence of sodium compounds is indicated by the yellow color of the flame when an alcoholic solution is ignited. Thirty parts of it dissolved in distilled water and well agitated with a solution of forty parts of sulphate of copper, should yield a filtrate free from copper and not precipitated by sulphuretted hydrogen.

Preparation for Homœopathic Use.—The pure sulphuret of potassium is triturated as directed under Class VII.

HEPATICA.

Synonyms, Hepatica Triloba. *Anemone Hepatica*, Linn.

Nat. Ord., Ranunculaceæ.

Common Name, Liverwort.

This is an indigenous plant, with a perennial fibrous root; leaves three-lobed, cordate at their base, coriaceous, nearly smooth, glaucous, and purplish beneath, and supported upon hairy footstalks from four to eight inches long, which spring directly from the root. The scapes or flower-stems are several in number, of the same length as the petioles, round, hairy, and terminating in a single white, bluish, or purplish flower. The calyx is at a little distance below the corolla, and is considered by some an involucre, while the corolla takes the name of the calyx. The plant is found growing upon the sides of hills and mountains, preferring the southern exposure. The leaves resist the cold of winter, and the flowers appear early in spring.

Preparation.—The fresh leaves are chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and after thoroughly mixing the pulp with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, and having poured it into a well-stoppered bottle, it is allowed to stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{4}$.

Dilutions must be prepared as directed under Class III.

HIPPOMANES.

Hippomanes is the normally white, usually dark olive-green, soft, glutinous, mucous substance, of a urinous odor, which floats in the allantois fluid, or is attached to the allantois membrane of the mare or cow, chiefly during the last months of pregnancy. For the provings

the substance was taken by the veterinary Helffrich from the tongue of a newly born filly, and when dried was employed.

Preparation.—The dried substance is triturated according to Class VII.

HURA BRAZILIENSIS, Willd.

Nat. Ord., Rutaceæ.

Common Names (in Brazil), Assacu. Oassacu.

This plant inhabits the equatorial regions of South America, the provinces of Para, Rio Negro, and the neighborhood of the Amazon, where it is very abundant. It resembles the *Hura Crepitans*, Linn; its leaves are alternate, somewhat cordate, rounded, glabrous, serrate; rolled up and stipulate while young. The petiole is provided at its top with two large glands. Flowers monœcious; the male flowers having a short, urceolate perianth, and covered with a scaly bract; they form elongated, peduncled, terminal husks. The female flowers, which are twice as long as those of the *Hura Crepitans*, have their perianth resting against the ovary, which is surmounted by a long and infundibuliform style, terminated by a stellate stigma; they are solitary and placed near the male flowers. It is from this tree that the Indians draw the milky juice called Assacu by the Brazilians.

Preparation.—The fresh sap, obtained by boring the trunk of the tree, is mixed with an equal part by weight of alcohol.

Amount of drug power, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class I.

HYDRASTIS.

Synonyms, *Hydrastis Canadensis*, Linn. *Warneria Canadensis*.

Nat. Ord., Ranunculaceæ.

Common Names, Golden Seal. Yellow Root. Yellow Puccoon.

This is a small, herbaceous, perennial plant, with a thick, fleshy, yellow rhizome, from which numerous long radical fibres proceed, and an erect, simple, pubescent stem, from six inches to a foot in height. There are usually but two leaves, which are unequal, one sessile at the top of the stem, the other attached to it a short distance below by a thick, roundish footstalk, causing the stem to appear as if bifurcate near the summit. The leaves are pubescent, roundish cordate, with from three to seven, but generally five lobes, which are pointed and unequally serrate. A solitary flower stands upon a peduncle rising from the base of the upper leaf. It is whitish, rose-colored, or purplish, without corolla, but with a colored calyx, the sepals of which closely resemble petals, and are very caducous, falling very soon after the flower has expanded. The fruit is a globose, compound, red or purple berry, half an inch or more in diameter, composed of many minute granules, each containing one or, more rarely, two seeds. The plant grows in moist, rich woodlands, in most parts of the United States, but abundantly in the North and West.

Preparation.—The fresh root is chopped and pounded to a pulp

and weighed. Then two parts by weight of alcohol are taken, and after thoroughly mixing the pulp with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, and poured it into a well-stoppered bottle, it is allowed to stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

HYDROCOTYLE ASIATICA, *Linn.*

Synonyms, *Hydrocotyle Nummularioides*. *Hydrocotyle Pallida*.
Nat. Ord., Umbelliferae.

Common Name, Indian Pennywort. Water Pennywort.

This is a low, creeping perennial, which is indigenous to the tropical and subtropical regions of Asia, Africa and America. The leaves are smooth, situated in tufts on the nodes of the stem, have petioles with a sheathing base, are roundish-reniform in outline, with a somewhat crenate margin, about an inch broad, rather thick, radiately veined and dark green. The pink-colored flowers are in small umbellate clusters of about three, and produce small, laterally flattened, sub-orbicular fruits without oil-tubes. The plant is inodorous, but on bruising the fresh leaves a peculiar odor is developed; the taste is bitter and pungent.

Preparation.—The carefully dried plant is finely powdered, covered with five parts by weight of alcohol, and allowed to remain eight days in a well-stoppered bottle in a dark, cool place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{16}$.

Dilutions must be prepared as directed under Class IV.

HYDROPHYLLUM VIRGINICUM, *Linn.*

Nat. Ord., Hydrophyllaceae.

Common Names, Burr Flower. Waterleaf.

This plant is indigenous, found growing in damp woods. Its stem is smooth, from one to two feet high. Leaves pinnately divided; the divisions five to seven, ovate-lanceolate or oblong pointed, sharply cut-toothed, the lowest mostly two-parted, the uppermost confluent; peduncles longer than the petioles of the upper leaves, forked. Calyx-lobes narrowly linear, bristly-ciliate. Corolla bell-shaped, five-cleft; the lobes convolute in the bud; the tube furnished with five longitudinal linear appendages opposite the lobes, which cohere by their middle, while their edges are folded inwards, forming a nectariferous groove. Stamens and style mostly exserted; filaments more or less bearded; anthers linear. Ovary bristly-hairy; the two fleshy placentae expanded so as to line the cell and nearly fill the cavity, soon free from the walls except at the top and bottom, each bearing a pair of ovules on the inner face. Pod ripening one to four seeds, spherical. Flowers appear from June to August.

Preparation.—The fresh plant, in bloom, is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After stirring the whole mixture well, pour it into a well-stoppered bottle, and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

HYDROPIPER.

Synonym, *Polygonum Hydropiper*, *Linn.*

Nat. Ord., Polygonaceæ.

Common Names, Common Smartweed. Water-Pepper.

This annual, growing from one to two feet high, is a native of Europe and North America, where it is found growing in moist or wet grounds. Stem is smooth; spikes nodding, usually short or interrupted; flowers mostly greenish; stamens six; style two or three-parted; achene dull, minutely striate, either flat or obtusely triangular. The whole herb is pungently acrid. Flowers appear in late summer or early autumn.

Preparation.—The fresh plant is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, pour it into a well-stoppered bottle, and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Amount of drug power, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

HYOSCYAMUS.

Synonyms, *Hyoscyamus Niger*, *Linn.* *Jusquiama*.

Nat. Ord., Solanaceæ.

Common Names, Henbane. Hogbean. Poison Tobacco.

This is usually a biennial plant, with a long, tapering, whitish, fleshy, somewhat branching root, not unlike that of parsley, for which it has been eaten by mistake, with poisonous effects. The stem, which rises in the second year, is erect, round, branching, from one to four feet high, and thickly furnished with leaves. These are large, oblong-ovate, deeply sinuated with pointed segments, undulated, soft to the touch, and at their base embrace the stem. The upper leaves are generally entire. Both the stem and leaves are hairy, viscid, and of a sea-green color. The flowers form long, one-sided, leafy spikes, which terminate the branches, and hang downwards. They are composed of a calyx with five pointed divisions, a funnel-shaped corolla, with five unequal, obtuse segments at the border, five stamens inserted into the tube of the corolla, and a pistil with a blunt, round stigma. Their color is an ob-

seure yellow, beautifully variegated with purple veins. The fruit is a globular two-celled capsule, covered with a lid, invested with the persistent calyx, and containing numerous small seeds, which are discharged by the horizontal separation of the lid. The whole plant has a rank offensive smell. The plant is a native of Europe, where it is found growing wild near roads, on heaps of rubbish and in gardens.

Preparation.—The fresh blooming plant is chopped and pounded to a pulp and pressed out *lege artis* in a piece of new linen. The expressed juice is then, by brisk agitation, mingled with an equal part by weight of alcohol. This mixture is allowed to stand eight days in a well-stoppered bottle, in a dark, cool place, and then filtered.

Drug power of tincture, $\frac{1}{4}$.

Dilutions must be prepared as directed under Class I.

HYPERICUM.

Synonyms, *Hypericum Perforatum*, Linn. *Fuga Dæmonum*. *Herba Solis*.

Nat. Ord., Hypericineæ.

Common Name, St. John's Wort.

This is a perennial herb, abundant both in Europe and this country, often covering whole fields, and proving extremely troublesome to farmers. It is usually from one to two feet high. The stem is erect, branched, smooth, two-edged, set with small, opposite, half-clasping, oblong-ovate, obtuse, smooth leaves, which when held against the light, look as if they were perforated. The flowers standing at the ends of the branches, are short petiolate, star-shaped, yellow, at the margin black-dotted, form cymes, and leave obtuse-triangular, resinous-shining, brown-red seed capsules.

Preparation.—The fresh, blooming plant, is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, pour it into a well-stoppered bottle, and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{4}$.

Dilutions must be prepared as directed under Class III.

IBERIS AMARA, Linn.

Synonym, *Sepidium Iberis*.

Nat. Ord., Cruciferae.

Common Name, Bitter Candy-Tuft.

This plant is indigenous to Europe. It is cultivated in gardens on account of its bright, milk-white flowers, and appears occasionally in corn fields in England. It is an herbaceous plant, about a foot in height, with a few erect branches forming a terminal flat corymb. Leaves oblong-lanceolate or broadly linear, with a few coarse teeth, or slightly pinnatifid. Flowers white. Pod nearly orbicular, the long style projecting from the notch at the top.

Preparation.—The ripe seeds are finely powdered, covered with five parts by weight of alcohol, and allowed to remain eight days in a well-stoppered bottle in a dark, cool place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Amount of drug power, $\frac{1}{16}$.

Dilutions must be prepared as directed under Class IV.

IGNATIA.

Synonyms, *Faba Febrifuga*. *Ignatia Amara*, *Linn.* *Strychnos Ignatia*, *Lindley*.

Nat. Ord., *Loganiaceæ*.

Common Names, *Ignatia*. Bean of Saint Ignatius.

This species of *strychnos* is a tree of middling size, with numerous long, cylindrical, glabrous, vine-like branches, which bear opposite, nearly sessile, oval, pointed, entire and very smooth leaves. The flowers are long, nodding, white, tubular, fragrant and arranged in short, axillary racemes. The fruit is of the size and shape of a pear, with a smooth, whitish, ligneous rind, enclosing about twenty seeds, embedded in a dry, medullary matter, and lying one upon the other. The seeds are about an inch long, rather less in breadth, still less in thickness, convex on one side, obscurely angular, with two, three, or four faces on the other, and marked at one end with a small depression indicating their point of attachment. They are externally of a pale brown color, apparently smooth, but covered in fact with a short down or efflorescence, which may be removed by scraping them with a knife. They are somewhat translucent, and their substance is very hard and horny. They have no smell, but an excessively bitter taste. The tree is a native of the Philippine Islands.

Preparation.—The finely powdered seeds are covered with five parts by weight of alcohol, and allowed to remain eight days in a well-stoppered bottle in a dark, cool place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{16}$.

Dilutions must be prepared as directed under Class IV.

Triturations are prepared from the finely powdered seed as directed under Class VII.

ILEX OPACA, *Aiton*.

Synonyms, *Ageria Opaca*. *Ilex Aquifolium*.

Nat. Ord., *Aquifoliaceæ*.

Common Name, American Holly.

This tree, from twenty to forty feet in height, is found growing in moist woodlands from Maine to Pennsylvania, near the coast, and more common from Virginia southward. Leaves oval, flat, the wavy margins with scattered spiny teeth; flowers in loose clusters along the base of the young branches and in the axils; calyx-teeth acute. Drupe red, its nutlets ribbed, veiny, or one-grooved on the back. Flowers appear in June.

having stirred the whole well, pour it into a well-stoppered bottle and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, 4.

Dilutions must be prepared as directed under Class III.

IODIUM.

Synonyms, Iodinium. Iodum. Jodium.

Common Name, Iodine.

Symbol, I.

Atomic Weight, 127.

A non-metallic element, obtained principally from the ashes of sea-weeds.

Origin.—Iodine is found in some minerals combined with mercury, silver, lead and other metals, in Chili saltpetre principally as sodium iodate, in many mineral-spring waters, in sea-water, and in many plants and animals living in sea-water or near the sea-coast. It is often a constituent of the atmosphere in minute quantities, and occasionally of the ashes of some plants growing inland.

Preparation of Iodine.—Large quantities are made from *kelp*, the ashes left on the burning of sea-weeds. The weed is first dried, and then charred or burned at as low a temperature as possible, to avoid loss of iodine. The ash is exhausted with hot water and the solution concentrated and cooled, to remove by crystallization potassium chloride and sodium carbonate and sulphate. More of the latter salt will crystallize after the addition of some sulphuric acid, whereby the sulphides and hyposulphites present are decomposed. To the mother-liquor heated in lead retorts to a temperature a little over 60° C. (140° F.) binoxide of manganese is added in small quantities, when iodine will distil over and is collected in glass receivers, several of which are connected with each other. The liberation of iodine from the sodium iodide of the liquid is explained by the following equation: $2\text{Na I} + 3\text{H}_2\text{SO}_4 + \text{Mn O}_2 = \text{I}_2 + 2\text{Na HSO}_4 + \text{Mn SO}_4 + 2\text{H}_2\text{O}$, acid sodium sulphate and manganium sulphate being formed at the same time. The mother-liquor obtained on the purification of Chili saltpetre contains sodium iodate and iodide; from the latter the iodine is separated by chlorine gas, from the former by sulphurous acid, in which case sodium sulphate is produced.

Purification.—In the crude state iodine is chiefly contaminated with water, but it sometimes contains also cyanogen iodide, and occasionally iodine chloride, I Cl. Purification is effected by drying the product as much as possible by mechanical means, and then subliming it carefully, so that the more volatile compounds named may first sublime; afterwards the heat is raised, and the receiver changed. The product is the *resublimed iodine* of commerce.

Properties.—Iodine is in flat scale-like rhombic crystals of a grayish-black color and a bright metallic lustre, and in thin splinters, transparent, with a red color. It is soft and friable, has an odor suggestive of chlorine, and a very caustic and acrid taste. The skin or paper is

transiently colored brown, and vegetable colors are slowly destroyed by it. It has the specific gravity 4.95, vaporizes at the ordinary temperature, fuses near 115° C. (239° F.), congeals at 113.6° C. (236.5° F.), and boils at 175° C. (347° F.); its vapor has the density 8.7, and a reddish or purple, or, above the boiling point, a deep blue color. Iodine dissolves in about sixty parts of glycerin, and in seven thousand parts (Gay-Lussac) (sixty-five thousand parts according to Dossios and Weith) of water, and forms with it gradually hydriodic acid, which dissolves more iodine; its solubility in water is also increased by many salts, and particularly by iodides. It is freely soluble in alcohol and ether with a brown color, and in chloroform, carbon bisulphide, and hydrocarbons with a purplish or violet color.

Impurities and Adulterations.—At present, iodine is usually met with in commerce in a very pure condition, containing only minute quantities of impurities. An excessive proportion of water is indicated by the iodine adhering to the bottle, and may be removed by placing it under a bell-glass over oil of vitrol at a low temperature. The presence of cyanogen iodide and iodine chloride is detected by heating the iodine in a suitable apparatus for about fifteen minutes to 100° C. (212° F.), and cooling the vapors well; the former impurity will sublime as white or yellowish needles, the latter as hyacinthine-red prisms or red-brown oil; both have a pungent odor. Fixed impurities, such as graphite, charcoal, sawdust, metallic compounds, etc., are left behind on volatilizing a little from a porcelain capsule. The British Pharmacopœia directs 12.7 grains of iodine to be dissolved in an ounce of water containing 15 grains of potassium iodide; if no impurities whatever are present, the solution requires for complete discoloration 1000 grain-measures of the volumetric solution of hyposulphite of sodium.

Iodine is readily recognized by the blue color which it imparts to starch paste, by which test $\frac{1}{400,000}$ part of free iodine is recognized.

Preparation for Homœopathic Use.—One part by weight of resublimed iodine is dissolved in fifty parts by weight of alcohol.

Amount of drug power, $\frac{1}{100}$.

Dilutions must be prepared as directed under Class VI— β .

Triturations are prepared as directed under Class VII.

IODOFORMIUM.

Synonym, Iodoformum.

Common Name, Iodoform.

Formula, C H I_3 .

Molecular Weight, 394.

Preparation of Iodoform.—Iodoform is produced by the action of iodine in the presence of alkalies upon alcohol, aldehyd, ether, acetic ether, methylic alcohol, and in minute quantities when acting upon carbohydrates or protein compounds. Wilder (1875) recommends Bouchardat's process as an easy one, and Filhol's as one giving a large yield. By following the former, 100 parts iodine, 100 potassium bicarbonate, 1200 water, and 250 alcohol are mixed in a flask with a long neck and slowly heated to between 60° and 80° C. (140° and

176° F.), until the color has disappeared, when 25, 20 and 10 parts of iodine are to be added, waiting after each addition, until the iodine color has disappeared, and adding, at the close, if necessary, a little potassa; after setting aside for twenty-four hours the crystals are collected upon a filter. About one-third of the iodine is recovered as iodoform, the remainder appearing in the mother-liquor chiefly as iodide of potassium, and may be obtained by supersaturating with sulphuric and then adding a little nitric acid. In Filhol's process this iodine is utilized by liberating it by means of chlorine and converting it into iodoform. The proportions recommended are two parts of crystallized sodium carbonate, ten of water, and one of alcohol, warmed as before; one part of iodine is added in small portions, and after cooling the crystals are collected. The filtrate is again warmed, two parts sodium carbonate are added, and a rapid current of chlorine gas is passed through the liquid as long as iodoform is separated, which is again collected, while the filtrate may be made to yield a little more iodoform by repeating the treatment. As much as 72 per cent. of crystals may thus be obtained.

Properties.—Iodoform is in lemon-yellow, pearly, scale-like crystals, which have a strong saffron-like odor, and a peculiar sweetish taste. It is insoluble in water, but dissolves readily in alcohol, ether, chloroform, carbon bisulphide and the fixed and volatile oils. It volatilizes slowly on exposure, fuses at about 115° C. (239° F.), and sublimes partly unaltered, but is mostly decomposed into iodine and hydriodic acid with a residue of glossy charcoal. Heated with water it volatilizes with the vapors without decomposition; but when boiled with potassa solution, a portion of it is decomposed, yielding formate and iodide of potassium, and when distilled with alcoholic solution of potassa, an oily liquid of an ethereal odor and containing iodine is obtained in the distillate.

Tests.—Impurities are not likely to be present; the physical properties, and particularly its odor and behavior to solvents, determine the absence of impurities which might result from the process of manufacture. Fixed impurities would be left behind on heating a portion upon platinum foil until the charcoal has been consumed.

Preparation for Homœopathic Use.—Iodoform is triturated as directed under Class VII.

IPECACUANHA.

Synonym, *Cephaelis Ipecacuanha*, *A. Richard*.

Nat. Ord., Rubiaceæ.

Common Name, *Ipecac.*

This is a small shrubby plant, with a root from four to six inches long, about as thick as a goose-quill, marked with annular rugæ, simple or branched, descending obliquely into the ground, and here and there sending forth slender fibrils. The stem is two or three feet long; but, being partly under ground, and often procumbent at the base, usually rises less than a foot in height. It is slender; in the lower portion leafless, smooth, brown or ash-colored, and knotted, with radi-

cles frequently proceeding from the knots; near the summit, pubescent, green, and furnished with leaves seldom exceeding six in number. These are opposite, petiolate, oblong-obovate, acute, entire, from three to four inches long, from one to two broad, obscurely green and somewhat rough on their upper surface, pale, downy, and veined on the under. At the insertion of each pair of leaves are deciduous stipules, embracing the stem, membranous at the base, and separated above into numerous bristle-like divisions. The flowers are very small, white, and collected to the number of eight, twelve, or more, each accompanied with a green bract, into a semi-globular head, supported upon a round, solitary, axillary footstalk, and embraced by a monophyllous involucre, deeply divided into four (sometimes five or six obovate) pointed segments. The fruit is an ovate, obtuse berry, which is at first purple, but becomes almost black when ripe, and contains two small plano-convex seeds.

The plant is a native of Brazil, flourishing in moist, thick, and shady woods, and abounding most within the limits of the eighth and twentieth degrees of south latitude. It flowers in January and February, and ripens its fruit in May.

Preparation.—The dried root is finely powdered, and covered with five parts by weight of alcohol; having been poured into a well-stoppered bottle, it is allowed to remain eight days in a dark, cool place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{16}$.

Dilutions must be prepared as directed under Class VI.

IRIDIUM.

Symbol, Ir.

Atomic Weight, 198.

Origin and Preparation of Iridium.—When crude platinum is dissolved in nitromuriatic acid, a small quantity of a gray scaly metallic substance usually remains behind, having altogether resisted the action of the acid; this is a native alloy of iridium and osmium, called *osmiridium* or *iridosmine*; it is reduced to a powder, mixed with an equal weight of dry sodium chloride, and heated to redness in a glass tube, through which a stream of moist chlorine gas is transmitted. The farther extremity of the tube is connected with a receiver containing solution of ammonia. The gas, under these circumstances, is rapidly absorbed, iridium chloride and osmium chloride being produced; the former remains in combination with the sodium chloride; the latter, being a volatile substance, is carried forward into the receiver, where it is decomposed by the water into osmic and hydrochloric acids, which combine with the alkali. The contents of the tube when cold are treated with water, by which the iridium and sodium chloride is dissolved out; this is mixed with an excess of sodium carbonate and evaporated to dryness. The residue is ignited in a crucible, boiled with water, and dried; it then consists of a mixture of ferric oxide and a combination of iridium oxide with soda; it is reduced by

hydrogen at a high temperature, and treated successively with water and strong hydrochloric acid, by which the alkali and the iron are removed, while metallic iridium is left in a finely divided state. By strong pressure and exposure to a white heat, a certain degree of compactness may be communicated to the metal.

Properties.—Iridium is a white brittle metal, fusible with great difficulty before the oxy-hydrogen blow-pipe. Deville and Debray, by means of their powerful oxy-hydrogen blast furnace, have fused it completely into a pure white mass, resembling polished steel, brittle in the cold, somewhat malleable at a red heat, and having a density equal to that of platinum, viz., 21.15 (21.8 Hare). By moistening the pulverulent metal with a small quantity of water, pressing it tightly, first between filtering paper, then very forcibly in a press, and calcining it at a white heat in a forge-fire, it may be obtained in the form of a compact, very hard mass, capable of taking a good polish, but still very porous, and of a density not exceeding 16.0. After strong ignition it is insoluble in all acids, but when reduced by hydrogen at low temperatures, it oxidizes slowly at a red heat, and dissolves in nitromuriatic acid. It is usually rendered soluble by fusing it with nitre and caustic potash, or by mixing it with common salt, or better, with a mixture of the chlorides of potassium and sodium, and igniting it in a current of chlorine, as above described.

Preparation for Homœopathic Use.—Iridium is triturated as directed under Class VII.

IRIS VERSICOLOR, Linn.

Synonym, Iris Hexagona.

Nat. Ord., Iridaceæ.

Common Names, Blue Flag. Flower-de-luce. Liver Lily.

This indigenous species of iris has a perennial, fleshy, horizontal, fibrous root or rhizome, and a stem two or three feet high, round on one side, acute on the other, and frequently branching. The leaves are sheathed at the base, sword-shaped, and striated. The flowers are from two to six in number, and are usually blue or purple, though varying much in color. The capsule has three valves, is divided into three cells, and when mature is oblong, three-sided, with obtuse angles, and contains numerous flat seeds.

The blue flag is found in all parts of the United States, flourishing in low wet places, in meadows, and on borders of swamps, which it serves to adorn with its large and beautiful flowers, which make their appearance in June.

Preparation.—The fresh root, gathered in late autumn or early spring, is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and after thoroughly mixing the pulp with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, pour it into a well-stoppered bottle and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{6}$.

Dilutions must be prepared as directed under Class III.

JABORANDI.

Synonyms, *Monniera Trifoliata*. *Ottonia Anisum*. *Pilocarpus Pennatifolius*, *Lemaire*. *Pilocarpus Pinnatus*, *Martins*.

Nat. Ord., Rutaceæ.

Common Name, Jaborandi.

Jaborandi is a kind of generic name used in South America for several plants possessing diaphoretic properties. The *pilocarpus jaborandi* is a shrub growing in Brazil in the neighborhood of Pernambuco. The leaves are imparipinnate, and are composed of four to ten short-stalked leaflets with an unequal base, and a terminal one which has a longer stalk and is more tapering and nearly equal at base. The leaflets are about four inches long, oval or ovate-oblong, entire and slightly revolute at the margin, rather rounded below and obtuse and usually emarginated above. They are of a coriaceous texture, green and shining above, and on the under side paler and smooth or somewhat hairy and with a prominent midrib. The entire blade is marked with numerous pellucid glands; the leaves are nearly inodorous, but when bruised exhale a slightly aromatic odor; the taste is herbaceous, afterwards aromatic, warm, and somewhat bitter.

Preparation.—The dried leaves and stems are finely powdered, and covered with five parts by weight of alcohol, and allowed to remain eight days in a well-stoppered bottle in a dark, cool place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{10}$.

Dilutions must be prepared as directed under Class IV.

JACARANDA CAROBA, De Candolle.

Synonyms, *Bignonia Caroba*. *Jacaranda Braziliensis*.

Nat. Ord., Bignoniaceæ.

Common Name, Caroba.

The caroba is very common in Brazil, in gardens and on plantations. It is a tree with white wood, the ramose top of which attains a height of from twenty to twenty-eight feet. Leaves pinnate, tri- or quadrijugate, composed of from five to nine opposite, sessile, glabrous and oval folioles. Flowers large, violet-colored, on pedicels that are expanded at their extremities, and forming ramose terminal panicles. Calyx tubulous, with five teeth; corolla tubulous, slightly pubescent externally, and expanding at its summit into a limb with five obtuse divisions. Stamens five, one of which is rudimentary; ovary ovoid, surmounted by a simple style terminating in a bilamellary stigma. The husks are linear and flat. Blossoms appear in September.

Preparation.—The fresh flowers are pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and, having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, pour it into a well-stoppered bottle and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Amount of drug power, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

JALAPA.

Synonyms, *Ipomœa Jalapa*, *Nuttall*. *Ipomœa Purga*, *Hoyne*. *Exogonium Purga*, *Bentham*. *Mechoacanna Nigra*.

Nat. Ord., Convolvulacæ.

Common Name, Jalap.

The root of this plant is a roundish somewhat pear-shaped tuber, externally blackish, internally white, with long fibres proceeding from its lower part, as well as from the upper rootstalks. A tuber produced by Dr. Coxe was, in its third year, between two and three inches in diameter. The stem is round, smooth, much disposed to twist, and rises to a considerable height upon neighboring objects, about which it twines. The leaves are heart-shaped, entire, smooth, pointed, deeply sinuated at the base, prominently veined on their under surface, and supported upon long footstalks. The lower leaves are nearly hastate, or with diverging angular points. The flowers, which are large and of a lilac-purple color, stand upon peduncles about as long as the petioles. Each peduncle supports two, or, more rarely, three flowers. The calyx is without bractes, five-leaved, obtuse, with two of the divisions external. The corolla is funnel-form. The stamens are five in number, with oblong, white, somewhat exserted anthers. The stigma is simple and capitate. The odor of the root, when cut or broken, is heavy, sweetish and rather nauseous; the taste is sweet, somewhat acrid, and disagreeable. The plant is a native of Mexico, and derives its name from the City of Xalapa, in the State of Vera Cruz, in the neighborhood of which it grows, at the height of about 6000 feet above the ocean.

Preparation.—The heavy, resinous root, carefully dried and finely pulverized, is covered with five parts by weight of alcohol and allowed to remain eight days in a well-stoppered bottle in a dark, cool place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{16}$.

Dilutions must be prepared as directed under Class IV.

JANIPHA MANIHOT, Kunth.

Synonyms, *Cassada*. *Jatropha Manihot*, *Linn*. *Manihot Utilissima*. *Manioca Mandi*.

Nat. Ord., Euphorbiacæ.

Common Names, Tapioca Plant. *Manioca*. *Cassava*.

The tapioca plant, also known as *cassava*, *mandioc*, and *manioc*, is probably indigenous to Brazil, where it has been cultivated, from a remote period, for its nutritious root. It is a bush with a round and ramose stem, often growing to three feet in height. Its leaves, which are of a sea-green color and supported by long petioles, are alternate, palmate, with five to seven lanceolate, smooth and entire lobes. The flowers, which are monœcious, form branching panicles either terminal or axillary; the perianth is calicoid, campanulate, with five deep divisions of a light yellow color, changing to a brown at the extremity

of the divisions. Flowers, male, ten stamens, with alternately long and short filaments inserted in a fleshy disk, which, in the female flowers, surrounds the base of a sub-globular ovary, with three uniovulate chambers; no style, but three stigmata presenting six or seven thick, compressed lobes that constitute a thick and sinuous mass. The roots, which are tuberculous and very big, contain an abundance of milky juice very poisonous when fresh, which is extracted first by pressure and afterwards by the desiccation of the feculent portion, that constitutes the chief nutriment of the Brazilian farmer.

Preparation.—The milky juice of the fresh root is triturated as directed under Class VIII.

JATROPHA CURCAS, *Linn.*

Synonyms, Curcus Purgans, *Adanson.* Ficus Infernalis. Ricinus Majoris.

Nat. Ord., Euphorbiaceæ.

Common Names, Physic Nut. Purging Nut.

This is a medium sized monoëcious shrub, indigenous to the West Indies and South America, but naturalized in other tropical countries. It has smooth, angular-cordate leaves, paniculate cymes of greenish-yellow bell-shaped flowers, the pistillate ones few and largest, and tricoceous, obtusely triangular, and blackish capsules, each cell containing one seed. The seeds are about an inch long, ovate-oblong, flattened from the back with a broad whitish hilum and caruncle at one end, black, not shining, somewhat rough and marked with numerous small cracks. The kernel has the shape of the seed, and consists of an oily albumen which encloses the embryo. The seeds are inodorous; the kernels have a sweetish and oily taste, which gradually becomes acrid and burning.

Preparation.—The ripe seeds are finely powdered and covered with five parts by weight of alcohol, and allowed to remain eight days in a well-stoppered bottle in a dark, cool place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{10}$.

Dilutions must be prepared as directed under Class IV.

JUGLANS CINEREA, *Linn.*

Synonym, Juglans Cathartica.

Nat. Ord., Juglandaceæ.

Common Names, Butternut. Oil Nut. White Walnut.

This is an indigenous forest tree. In favorable situations it attains a great size, rising sometimes fifty feet, with a trunk three or four feet in diameter at the distance of five feet from the root. The stem divides at a short distance from the ground into numerous, nearly horizontal branches, which spread widely and form a large tufted head. The young branches are smooth and of a grayish color, which has given origin to the specific name of the plant. The leaves are very long, and consist of seven or eight pairs of sessile leaflets, and a sin-

gle petiolate leaflet at the end. These are two or three inches in length, oblong-lanceolate, rounded at the base, acuminate, finely serrate and somewhat downy. The male and female flowers are distinct upon the same tree. The former are in large aments, four or five inches long, hanging down from the sides of the shoots of the preceding year's growth, near their extremity. The fertile flowers are at the end of the shoots of the same spring. The germ is surmounted by two large feathery, rose-colored stigmas. The fruit is sometimes single, suspended by a thin pliable peduncle. The drupe is oblong-oval, with a terminal projection, hairy, viscid, green in the immature state, but brown when ripe. It contains a hard, dark, oblong, pointed nut, with a rough, deeply and irregularly furrowed surface. The kernel is thick, oily and pleasant to the taste. The butternut grows in upper and lower Canada, and throughout the whole northern, eastern and western sections of the old United States. In the Middle States, the flowers appear in May, and the fruit ripens in September.

Preparation.—The fresh, young, inner bark (especially of the root) collected in May or June, is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, pour it into a well-stoppered bottle and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

JUGLANS REGIA, *Linn.*

Synonym, Nux Juglans.

Nat. Ord., Juglandaceæ.

Common Name, Common European Walnut.

This is a beautiful tree cultivated from southern Europe to central Germany, and has large, unequally pinnated, long-petiolate leaves, with smooth, entire, petiolate, sweet-scented leaflets.

Preparation.—In June and July, from the unripe, smooth, green fruit, the hulls are taken and, with an equal part of green leaves, are chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, pour it into a well-stoppered bottle and let it stand eight days in a dark cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

JUNCUS EFFUSUS, *Linn.*

Nat. Ord., Juncaceæ.

Common Names, Bulrush. Common or Soft Rush.

This perennial, growing in marshy grounds in Europe, Asia, and

America, rises from matted running rootstocks, to the height of two to four feet. The scape is soft and pliant; furnished at base with short leafless or rarely leaf-bearing sheaths; leaves, if any, terate, knotless and similar to the scape; inner sheaths awned; panicle diffusely much-branched, many-flowered; flowers numerous, small, greenish; sepals lanceolate, very acute, as long as the triangular-obovate retuse and pointless greenish-brown pod; anthers as long as filaments; style very short; seeds small, with short pale points, delicately ribbed and cross-lined. Flowers in spring.

Preparation.—The fresh root, gathered in spring, is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, pour it into a well-stoppered bottle, and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

JUNCUS PILOSUS.

Synonym, *Luzula Pilosa*, Willd.

Nat. Ord., Juncaceæ.

Common Name, Wood-Rush.

This is a perennial found growing usually in dry ground in shady places in Europe, Asia, Africa and North America. Its stem is slender, cyme lax, branches few reflexed in fruit, flowers subsolitary, perianth-segments acuminate shorter than the very broadly ovoid obtuse capsule, crest of seeds long curved terminal. Rootstock short, tufted; stolons slender. Stems many, one-half to one foot high. Leaves about half as long as the stem, one-sixth to one-quarter inch broad, soft, sparingly hairy. Cyme with capillary branches and pedicles. Flowers one-sixth to one-fifth inch, chestnut-brown, rarely in pairs; bract-eoles broad, short. Capsule very broad below, suddenly contracted to a conical top above the middle. Flowers appear in April and May.

Preparation.—The fresh root, gathered in spring, is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, pour it into a well-stoppered bottle, and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

JUNIPERUS COMMUNIS, Linn.

Nat. Ord., Coniferae.

Common Names, Common Juniper. Juniper.

This is an erect evergreen shrub, usually small, but sometimes twelve

or fifteen feet high, with numerous very close branches. The leaves are narrow, longer than the fruit, entire, sharply pointed, channeled, of a deep green color, somewhat glaucous on their upper surface, spreading, and attached to the stem or branches in threes, in a verticillate manner. The flowers are diceious, and disposed in small, ovate, axillary, sessile, solitary aments. The fruit is formed of the fleshy coalescing scales of the ament, and contains three angular seeds. The common juniper is a native of Europe, but has been introduced into this country, in some parts of which it has become naturalized. The berries, as the fruit is commonly called, the best of which come from the south of Europe, particularly from Trieste and the Italian ports, are globular, more or less shrivelled; about as large as a pea; marked with three furrows at the summit, and with tubercles from the persistent calyx at the base; and covered with a glaucous bloom, beneath which they are of a shining blackish-purple color. They have an agreeable somewhat aromatic odor, and a sweetish, warm, bitterish, slightly terebinthinate taste.

Preparation.—The fresh, ripe berries, are pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, pour it into a well-stoppered bottle, and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{4}$.

Dilutions must be prepared as directed under Class III.

KALI ACETICUM.

Synonyms, Acetas Kalicus. Potassium Acetate. Kali Acetas. Potassii Acetas.

Common Name, Acetate of Potash.

Formula, $KC_2H_3O_2$.

Molecular Weight, 98.

Preparation of Acetate of Potassium.—Take of acetic acid, a pint; of bicarbonate of potassium, a sufficient quantity. Add the bicarbonate of potassium gradually to the acetic acid until it is neutralized; then filter the solution and evaporate cautiously, by means of a sand-bath, until a dry salt remains, which is to be kept in a well-stoppered bottle.

Properties.—Acetate of potassium is a white salt forming a crystalline soft mass if obtained by the above process, or a dry granular powder, if the hot concentrated solution has been continuously stirred until dry. It is very deliquescent in the air, dissolves at the ordinary temperature in less than half its weight of water, and in about three parts of strong alcohol. The aqueous solution has a slight alkaline reaction, disengages acetous vapors on the addition of sulphuric acid, and yields with tartaric acid and platinic chloride the precipitates of potassium salts. Ether added to the alcoholic solution of the salt precipitates it as a crystalline powder.

Tests.—The solution of acetate of potassium in distilled water

should not give a precipitate or become turbid on the addition of hydrosulphuric acid, hydrosulphate of ammonium or ferro-cyanide of potassium (absence of heavy metals), nor with chloride of barium (sulphate or carbonate) or, if sufficiently diluted, with nitrate of silver. The last named reagent often produces a slight turbidity, which does not disappear on the addition of nitric acid, showing the presence of a trace of chloride. The concentrated aqueous solution of the salt, on being dropped into acetic acid, should not produce any effervescence, proving the absence of carbonate.

Preparation for Homœopathic Use.—One part by weight of acetate of potassium is dissolved in nine parts by weight of distilled water.

Amount of drug power, $\frac{1}{10}$.

Dilutions must be prepared as directed under Class V—*a*.

KALI ARSENICOSUM.

Synonyms, Kali Arseniatum. Potassium Arsenite.

Formula, $\text{HK}_2 \text{AsO}_3$.

Take of arsenious acid, one part, of pure and dry carbonate of potash, one part, and of distilled water, one part; boil in a test-tube until a clear liquid results, then add about forty parts of distilled water, and after the liquid has cooled add enough distilled water to bring the whole to one hundred parts.

This solution will contain one part of kali arsenicosum to one hundred of water and should be marked 2x.

Prepare further dilutions according to Class V.

KALI BICHROMICUM.

Synonyms, Potassæ Bichromas. Potassii Bichromas. Potassium Bichromate.

Common Name, Bichromate of Potash.

Formula, $\text{K}_2 \text{Cr}_2 \text{O}_7$.

Molecular Weight, 295.

Origin.—The metal *chromium* was discovered by Vauquelin, in 1797, in a Siberian mineral which is composed of chromate of lead; but it is more abundantly found as *chrome iron ore*, which is a compound of chromic and ferrous oxides, $\text{FeO} \cdot \text{Cr}_2 \text{O}_3$. It is met with in several localities in the United States, in Russia and Sweden, and is used in preparing the bichromate.

Preparation of Bichromate of Potassium.—The ore is roasted, finely powdered, mixed with carbonate of potassium and chalk, and the mixture strongly heated in a current of air, which oxidizes the iron to ferric oxide, and the chromium to chromic acid, the latter combining with the potassium carbonate to chromate of potassium with the evolution of carbonic acid. To facilitate the oxidation, a small portion of nitrate of potassium is sometimes added, but is not necessary; the chalk is used merely for preventing the mixture from fusing. After the roasting has been completed, the mass is lixiviated with water,

which dissolves neutral chromate of potassium, and the solution, after being acidulated with nitric or acetic acid, is evaporated and crystallized. Sulphuric acid is not as well adapted for this purpose, because the sulphate and chromate of potassium, being isomorphous, would crystallize together. The chrome iron ore may also be roasted with lime, in which case chromate of calcium is formed, which is dissolved in water and decomposed by carbonate or sulphate of potassium.

Properties.—Bichromate of potassium crystallizes in red transparent four-sided prisms or plates, and melts below a red heat to a transparent liquid, which on cooling crystallizes and finally falls into a crystalline powder. At a higher temperature, the salt is decomposed into oxygen gas, chromic oxide and yellow chromate of potassium, which may be separated by dissolving the latter in water. Bichromate of potassium is insoluble in alcohol, and requires, at the ordinary temperature, about ten parts of water for solution, but much less at the boiling point; the solution has an orange-red color, an acid reaction, and a bitter metallic taste, and is deoxidized with the formation of chromic oxide or chromic salts on the addition of sulphuretted hydrogen, sulphurous acid, sulphuric acid and alcohol, or other organic matters. Heated with hydrochloric acid, chlorine is given off. The solution yields a pale yellow precipitate with chloride of barium, a yellow one with acetate of lead, and a purplish-red one with nitrate of silver, the three precipitates being soluble in nitric acid.

Tests.—Its solution should not be precipitated on the addition of carbonate of potassium (absence of calcium salt), and after being acidulated with nitric acid, should not be disturbed by chloride of barium (absence of sulphates).

Preparation for Homœopathic Use.—One part by weight of bichromate of potassium is dissolved in ninety-nine parts by weight of distilled water.

Amount of drug power, $\frac{1}{100}$.

Dilutions must be prepared as directed under Class V— β , except that distilled water is used for dilutions to the 4x and 2 inclusive.

Triturations of bichromate of potassium are prepared as directed under Class VII.

KALI BROMATUM.

Synonyms, Bromuretum Kalicum. Kalium Bromatum. Potassii Bromidum.

Common Name, Bromide of Potassium.

Formula, K Br.

Molecular Weight, 119.

Preparation of Bromide of Potassium.—Take of bromine, two troy ounces; iron in the form of filings, a troy ounce; pure carbonate of potassium, two troy ounces and sixty grains; distilled water, four pints. Add the iron, and afterwards the bromine, to a pint and a half of the distilled water, stirring the mixture frequently with a glass rod for half an hour. Apply a gentle heat, and when the liquid assumes a greenish color, add gradually the pure carbonate of potassium, previously dis-

solved in a pint and a half of the distilled water, until it ceases to produce a precipitate. Continue the heat for half an hour and then filter. Wash the precipitate with the remainder of the distilled water boiling hot and again filter. Mix the filtered liquids and evaporate that crystals may form. Lastly, pour off the mother-water, and having dried the crystals on bibulous paper, keep them in a well-stoppered bottle.

Properties.—Bromide of potassium crystallizes in colorless cubes when pure. As met with in commerce the crystals are white, and having been obtained from an alkaline solution, have a slight alkaline reaction. It is permanent in the air, has a pungent, saline taste and when heated melts, congealing again to a transparent mass. According to Bremers (1856) one part of this salt dissolves at 0° C. (28° F.) in 1.87, at 20° C. (68° F.) in 1.55, at 40° C. (104° F.) in 1.34, and at 100° C. (212° F.) in 0.98 parts of water. It is sparingly soluble in alcohol, requiring of it about 200 parts, and shows to reagents the behavior of potassium salts and of hydrobromic acid.

Tests.—The aqueous solution of potassium bromide should be nearly neutral to test-paper, and on the addition of chloride of calcium should produce only a slight turbidity from the presence of a trace of carbonate. Sulphates, if present, would yield a white precipitate with chloride of barium, insoluble in hydrochloric acid. On the addition of hydrochloric acid, the solution should remain colorless; in the presence of bromate of potassium bromine would be liberated and impart a reddish or brownish-yellow color. If nitric acid, or preferably, a drop of chlorine water, is added to the solution on the further addition of a little starch paste, a blue color should not be produced (absence of iodide). Nitrate of silver produces a white precipitate, similar to that with chloride; but only the latter is readily soluble in *dilute* ammonia; hence, on agitating with a little ammonia and supersaturating with nitric acid, no precipitate should be produced, or only a faint turbidity. A more delicate test for chloride is the following: To a solution of the salt are added bichromate of potassium and sulphuric acid, and the mixture distilled; the distillate will contain *chlorochromic anhydrid*, $\text{Cr O}_2 \text{ Cl}_2$, and after neutralization with ammonia, will have a yellow color and show the reaction of chromates.

Preparation for Homœopathic Use.—One part by weight of pure bromide of potassium is dissolved in ninety-nine parts by weight of distilled water.

Amount of drug power, $\frac{1}{100}$.

Dilutions must be prepared as directed under Class V— β .

Triturations of pure bromide of potassium are prepared as directed under Class VII.

KALI CARBONICUM.

Synonyms, Carbonas Kalicus. Potassii Carbonas. Sal Tartari.

Common Names, Carbonate of Potassium. Salt of Tartar.

Formula, K_2CO_3 .

Molecular Weight, 138.

Preparation of Pure Carbonate of Potassium.—Take of bicarbonate of potassa in coarse powder, twelve troy ounces; distilled water, twelve fluid ounces. Put the bicarbonate of potassium into a capacious iron crucible; heat gradually until the water of crystallization is driven off; then raise the heat to redness, and maintain that temperature for half an hour. Having taken the crucible from the fire and allowed it to cool, dissolve its contents in the distilled water and filter the solution. Pour this into an iron vessel and evaporate over a gentle fire until it thickens. Lastly, remove it from the fire, and stir constantly with an iron spatula until it forms a granular salt, which must be preserved in a well-stoppered bottle.

Properties.—Carbonate of potassium in its pure state is a white salt usually in the form of a granular powder, which is deliquescent in the air, forming a colorless or yellowish liquid of an oily appearance (*oleum tartari per deliquium*). It is soluble in its own weight of cold water and in two-thirds its weight of boiling water, and from its concentrate solution may with some difficulty be obtained in transparent crystals, containing 16.4 per cent. of water ($1\frac{1}{2} H_2O$). It is insoluble in alcohol, dissolves in dilute acids with effervescence, and has the chemical behavior of potassium salts. It has a strong alkaline reaction and a strongly alkaline, but scarcely a caustic taste. Twenty grains of it neutralize seventeen grains of citric acid or eighteen grains of tartaric acid.

Tests.—It should be completely soluble in water and, when super-saturated with nitric acid and evaporated to dryness, the residue should be entirely soluble in water, and the solution should not be precipitated by chloride of barium or nitrate of silver. Eighty-three grains require for neutralization at least nine hundred and eighty grain-measures of the volumetric solution of oxalic acid. *Sodium* salts will be detected in the nearly neutralized solution by the white cloudiness or precipitate occasioned on the addition of antimoniate of potassium, and by the yellow color imparted by the salt to an alcohol flame. *Nitrites* and *nitrates* are indicated by the purple or blackish-brown color appearing on the addition to the solution of a little ferrous sulphate, and afterwards of some strong sulphuric acid. *Cyanide* of potassium, if present, will yield a blue precipitate or color, with a mixture of ferrous and ferric salt strongly acidulated with hydrochloric acid. *Phosphate* is indicated, if a white precipitate appears in the solution, previously acidulated with hydrochloric acid and again rendered alkaline by ammonia, on the addition of magnesium sulphate.

Preparation for Homœopathic Use.—One part by weight of pure carbonate of potassium is dissolved in nine parts by weight of distilled water.

Amount of drug power, $\frac{1}{10}$.

Dilutions must be prepared as directed under Class V—*a*.

Triturations of the pure carbonate of potassium are prepared as directed under Class VII, but owing to the deliquescence of the salt the 1x will not keep.

KALI CAUSTICUM.

Synonyms, Lapis Causticus. Potassa Caustica. Potassæ (Potassii) Hydras. Potassium Hydrate.

Common Name, Caustic Potash.

Formula, KHO.

Molecular Weight, 56.

Preparation of Caustic Potassa.—Take of solution of potassa, eight pints. Evaporate the solution rapidly in an iron vessel over the fire, until ebullition ceases and the potassa melts. Pour this into suitable moulds, and, when cold, keep it in a well-stoppered bottle.

Properties.—Caustic potassa is in dry white cylindrical pieces, which break readily with a crystalline fracture. On exposure to the air, it absorbs water rapidly, becomes liquid, and combines with carbonic acid; it is also soluble in alcohol, and slightly so in ether. When heated it fuses to a colorless oily liquid, and in a strong red heat it slowly volatilizes, forming white acrid vapors.

Tests.—Most of the salts likely to be present in caustic potassa are insoluble in alcohol, and are therefore precipitated if the potassa is dissolved in two parts of water, and the solution mixed with four parts of alcohol; only a scanty crystalline precipitate or dense watery liquid should be separated. A minute quantity of chloride is usually present, and indicated by the curdy white precipitate produced with nitrate of silver in the solution acidulated with nitric acid.

The presence of nitrate is shown by acidulating the solution with sulphuric acid, adding a minute quantity of indigo solution, and heating, when the blue color will be destroyed.

Preparation for Homœopathic Use.—One part by weight of pure caustic potassa is dissolved in nine parts by weight of distilled water.

Amount of drug power, $\frac{1}{16}$.

Dilutions must be prepared as directed under Class V—*a*.

KALI CHLORICUM.

Synonyms, Potassæ Chloras. Potassii Chloras. Potassium Chlorate.

Common Name, Chlorate of Potash.

Formula, K Cl O₃.

Molecular Weight, 122.5.

Preparation of Chlorate of Potassium.—Take of carbonate of potash, twenty ounces; slaked lime, fifty-three ounces; distilled water, a sufficiency; black oxide of manganese, eighty ounces; hydrochloric acid, twenty-four pints. Mix the lime with the carbonate of potash, and triturate them with a few ounces of the water so as to make the mixture slightly moist. Place the oxide of manganese in a large re-

tort or flask, and, having poured upon it the hydrochloric acid, dilute with six pints of water, apply a gentle heat by means of a sand-bath, and conduct the chlorine as it comes over, first through a bottle containing six ounces of water, and then into a large carboy containing the mixture of carbonate of potash and slaked lime. When the whole of the chlorine has come over, remove the contents of the carboy, and boil them for twenty minutes with seven pints of the water; filter and evaporate till a film forms on the surface, and set aside to cool and crystallize. The crystals thus obtained are to be purified by dissolving them in three times their weight of boiling distilled water, and again allowing the solution to crystallize.

Properties.—Chlorate of potassium crystallizes in colorless, shining, rhomboidal plates, and has a cooling, saline taste. It is permanent in the air, melts without decomposition at 334° C. (633.2° F.), gives off oxygen at 355° C. (671° F.), at the same time it forms potassium perchlorate, and at a higher temperature parts with all its oxygen (39 per cent. of its weight), leaving potassium chloride. It requires at 15° C. (59° F.) nearly seventeen parts of water for solution; at 35° C. (95° F.), a little over eight parts; and, at the temperature of boiling water, somewhat less than two parts. It is slightly soluble in ordinary alcohol, but is insoluble in absolute alcohol. If triturated with sulphur, sugar, tannin, or other readily oxidizable substances, violent explosions will result. As ordinarily met with in commerce, the salt contains traces of calcium chloride, from which it is freed by dissolving it in two or three times its weight of distilled water, and stirring the solution while cooling; it will then be obtained in small crystals, which, after draining and washing with cold water, are pure. When strong sulphuric acid is added to chlorate of potassium, *chloric peroxide*, Cl_2O_4 , is formed; this is a yellow, heavy gas, which, in the presence of combustible matter, or by a slight elevation of temperature, is decomposed with a powerful explosion into oxygen and chlorine. On adding strong hydrochloric acid to potassium chlorate, a deep yellow, dangerously explosive gas, the *euchlorine* of Davy, is produced; it is a mixture of chlorine and of chloro-chloric acid, Cl_2O_3 . (Cl_2O_5)₂, which, on being dissolved in water, is decomposed into chlorine and chloric peroxide.

Tests.—The aqueous solution of chlorate of potassium should not be precipitated by chloride of barium (sulphate), nitrate of silver (chloride), or oxalate of ammonium (calcium salt). After heating the salt to redness until gas ceases to be evolved, the residue should have a neutral reaction to test-paper, and should not produce a red precipitate with corrosive sublimate (absence of nitrate).

Preparation for Homœopathic Use.—One part by weight of pure chlorate of potassium is dissolved in ninety-nine parts by weight of distilled water.

Amount of drug power, $\frac{1}{100}$.

Dilutions must be prepared as directed under Class V— β .

Triturations of pure chlorate of potassium are prepared as directed under Class VII.

KALI CYANATUM.

Synonyms, Kali Cyanuretum. Kalium Cyanatum. Potassii Cyanidum. Potassii Cyanuretum.

Common Names, Cyanide of Potassium. Cyanuret of Potassium.

Formula, K Cy or K C N.

Molecular Weight, 65.

Preparation of Cyanide of Potassium.—Take of ferrocyanide of potassium (dried), eight troy ounces; pure carbonate of potassium (dried), three troy ounces. Mix the salts intimately, and throw the mixture into a deep iron crucible previously heated to redness. Maintain the temperature until effervescence ceases, and the fused mass concretes, of a pure white color, upon a warm glass rod dipped into it. Then pour out the liquid carefully into a shallow dish to solidify, ceasing to pour before the salt becomes contaminated with the precipitated iron. Break up the mass while yet warm, and keep the pieces in a well-stoppered bottle.

Properties.—From its aqueous solution pure cyanide of potassium crystallizes in octohedrons or cubes, which may melt at a dull red heat to a colorless liquid, congealing on cooling in cubical crystals. When perfectly dry it is inodorous, but when moist it is decomposed by the carbonic acid of the atmosphere, and has the odor of hydrocyanic acid. It has an alkaline and bitter taste, reacts upon test-papers strongly alkaline, is deliquescent on exposure, and is freely soluble in water, but is nearly insoluble in absolute alcohol. On heating the aqueous solution, the salt is partly decomposed into ammonia and formiate of potassium. It yields with nitrate of silver a white precipitate which is insoluble in dilute nitric acid, but dissolves readily in ammonia. It is a powerful poison.

Tests.—Liebig observed that iodine, added to a solution of potassium cyanide, forms iodide of potassium and iodide of cyanogen, both being colorless compounds. Fordes and Gelis (1852) recommended this reaction for the estimation of pure cyanide in the commercial salt; this is dissolved in water, an excess of carbonic acid is added to convert any carbonate that may be present into bicarbonate, and afterwards an alcoholic solution of iodine until the liquid acquires a yellow color due to uncombined iodine. Since one molecule of potassium cyanide (65) requires two atoms of iodine ($2 + 127 = 254$) for the production of the colorless iodides, every 254 grains of iodine used, when the yellow color makes its appearance, indicate 65 grains of pure cyanide of potassium. However, the correctness of the result is materially affected by the liberation of hydrocyanic acid by the carbonic acid added, and if the latter is omitted by the presence of potassium carbonate or caustic potassa.

Preparation for Homœopathic Use.—The pure cyanide of potassium is prepared by trituration as directed under Class VII.

KALI FERROCYANATUM.

Synonyms, Ferrocyanuret of Potassium. Kalium Borussicum. Kalium Ferrocyanatum. Potassii Ferrocyanidum.

Common Names, Ferrocyanide of Potassium. Yellow Prussiate of Potash.

Formula, $K_4 Fe Cy_6 .3H_2 O = K_4 Fe C_6 N_6 .3H_2 O$.

Molecular Weight, 422.

Preparation of Ferrocyanide of Potassium.—This salt was discovered by Macquer (1752) in boiling Prussian blue with caustic potassa. The iron contained in it was for a long time supposed to be an impurity, even after Berthollet (1787) had shown it to be one of its essential constituents. The salt is now extensively prepared by heating, in suitable iron vessels, potash which is free from sulphate until it is melted, and introducing a mixture composed of one part of iron filings and twenty-eight to thirty-three parts of charcoal obtained from blood, hoofs, horn, hides, leather, or similar animal substances rich in nitrogen. It is less advantageous to employ these substances in the uncharred condition. One hundred parts of potash require about seventy-five or eighty parts of the charcoal, or about one hundred parts of the animal matter. An evolution of carbonic acid and inflammable gases takes place after each addition to the melted mass and, when the whole fuses quietly, the *melt*, as it is termed, is ladled out, cooled, dissolved in water, decanted from the sediment and crystallized. Before it enters commerce, it requires purification by recrystallization from water.

The above quantities yield about one hundred and twenty parts of melt and about twenty-five parts of crystallized ferrocyanide of potassium. The insoluble portion of the melt consists of charcoal, phosphate of calcium and silica. The mother liquors, which furnish no longer well-defined crystals, are evaporated and used in another operation.

Properties.—Ferrocyanide of potassium crystallizes from water in large yellow four-sided tables or prisms, which are translucent and rather soft and friable. It has the specific gravity 1.83, a sweetish and saline taste, and dissolves with a yellow color in four and a half parts of cold and in two parts of hot water, the salt being precipitated from this solution by alcohol in pale yellow, pearly scales. Above 53° C. (122° F.) the salt begins to lose its water of crystallization, of which it contains 12.8 per cent., becoming anhydrous at 100° C. (212° F.), leaving a white friable mass, which melts below red heat, and at a higher temperature is decomposed into nitrogen gas and a mixture of potassium cyanide and carbide of iron. Exposed to light in the presence of moisture it is slowly decomposed, with the formation of Prussian blue. Its solution produces a dark blue precipitate with ferric salts, a bluish-white precipitate with ferrous salts; a brown-red precipitate with salts of copper, and white precipitates with acetate of lead and corrosive sublimate. Heated with dilute sulphuric acid, hydrocyanic acid is given off. Alkalies fail to precipitate the iron from its solution; but, on fusing the salt with potassium carbonate, cyanide of potassium is formed, and metallic iron is separated.

Tests.—The concentrated solution of the salt should not effervesce on the addition of sulphuric acid (absence of carbonate) and, when diluted with water and acidulated with hydrochloric acid, should not produce a white precipitate with chloride of barium (absence of sulphate). Since nitrate of silver is precipitated white by ferrocyanide of potassium, the presence of chloride in the latter cannot be detected until after the salt has been decomposed by fusion with pure nitrate of ammonium, when the solution of the residue acidulated with nitric acid should not give a curdy white precipitate with nitrate of silver.

Preparation for Homœopathic Use.—The pure ferrocyanide of potassium is prepared by trituration, as directed under Class VII.

KALI HYPOPHOSPHOROSUM.

Synonyms, Hypophosphis Kalicus. Potassii Hypophosphis. Hypophosphis Potassicus.

Common Name, Hypophosphite of Potash.

Formula, KPH_2O_2 .

Molecular Weight, 104.

Preparation of Hypophosphite of Potassium.—This salt may be prepared in a manner similar to that by which hypophosphite of calcium is obtained. When a solution of potassa is boiled with phosphorus, hypophosphite of potassium is produced, which is freed from potassa by passing carbonic acid gas into the solution, evaporating and dissolving the hypophosphite by alcohol. It is also yielded by the double decomposition of hypophosphite of calcium and carbonate of potassium, when carbonate of calcium is precipitated, and hypophosphite of potassium remains in solution; $Ca\ 2PH_2O_2 + K_2CO_3$ yields $CaCO_3 + 2KPH_2O_2$.

Properties.—It may be obtained in hexagonal tabular crystals; but, being extremely deliquescent on exposure, it is usually seen in opaque crystalline masses. It is very freely soluble in water and diluted alcohol, less soluble in absolute alcohol, but insoluble in ether. Heated to redness when not in contact with air, it evolves easily inflammable phosphoretted hydrogen. According to Rammelsberg (1872), the gas given off consists of hydrogen and phosphoretted hydrogen, and the residue of pyrophosphate and metaphosphate of potassium. Heated in the air it burns with a yellow flame, and when evaporated with nitric acid it detonates violently. When boiled with potassa, hydrogen is given off, *phosphite*, and after the solution becomes more concentrated, phosphate of potassium is formed. The solution yields with nitrate of silver, a white precipitate, which rapidly turns brown and black, separating metallic silver; acidulated with hydrochloric acid, it causes a black precipitate of metallic mercury with corrosive sublimate, or with an excess of the latter a white precipitate consisting of calomel.

Tests.—The above reactions in connection with the ready solubility in water and alcohol prove the purity of the salt. Carbonate would be detected by the effervescence with acids; sulphate by a white precipitate with an acidulated solution of baryta, and phosphate by a

similar precipitate with solution of chloride of ammonium and magnesium, rendered slightly alkaline by ammonia.

Preparation for Homœopathic Use.—One part by weight of pure hypophosphite of potassium is dissolved in nine parts by weight of distilled water.

Amount of drug power, $\frac{1}{10}$.

Dilutions must be prepared as directed under Class V—*a*.

Triturations of pure hypophosphite of potassium are prepared as directed under Class VII, but owing to the deliquescence of the salt the 1x will not keep.

KALI JODATUM.

Synonyms, Ioduretum Kalicum. Kali hydroiodicum. Kalium Iodatium. Potassii Iodidum.

Common Name, Iodide of Potassium.

Formula, K I.

Molecular Weight, 166.

Preparation of Iodide of Potassium.—Take of potassa, six troy ounces; iodine in fine powder, sixteen troy ounces, or a sufficient quantity; charcoal in fine powder, two troy ounces; distilled water, a sufficient quantity. To the potassa, dissolved in three pints of distilled water boiling hot, gradually add the iodine, stirring after each addition until the solution becomes colorless, and continue the additions until the liquid remains slightly colored from excess of iodine. Evaporate the solution to dryness, stirring in the charcoal towards the close of the operation, so that it may be intimately mixed with the dried salt. Rub this to powder, and heat it to dull redness in an iron crucible, maintaining that temperature for fifteen minutes; then, after it has cooled, dissolve the saline matter with distilled water, filter the solution, evaporate and set it aside to crystallize.

Properties.—When entirely pure, iodide of potassium is in transparent colorless cubes, of a neutral reaction. As generally met with, however, it is crystallized from an alkaline solution, and the crystals are white and opaque, or merely translucent. Crystals of similar appearance are also obtained, according to Wittstein (1861), from neutral solutions at a somewhat elevated temperature, and, according to Erlenmeyer, from very concentrated solutions. Iodide of potassium has a slight, peculiar odor, a pungent saline taste, melts when heated, and congeals on cooling to a pearly mass. At a bright red heat and in contact with air a trace of iodate is formed, a little iodine given off, and the mass acquires an alkaline reaction. It is permanent in the air, but in a damp atmosphere, or when of an alkaline reaction is deliquescent. It is freely soluble in water. It is likewise soluble in alcohol, requiring at the ordinary temperature 40 parts of absolute alcohol, 16 parts of alcohol, sp. gr. .835, 8 parts of alcohol, sp. gr. .850, and 1½ parts of diluted alcohol.

Tests.—The aqueous solution, mixed with mucilage of starch, gives a blue color on the addition of a little chlorine water, the chlorine liberating iodine, which combines with the starch to blue iodide of

starch. It gives a white crystalline precipitate of bitartrate of potassium on the addition of a concentrated solution of tartaric acid. The absence of *iodate* is recognized by adding mucilage of starch and afterwards dilute hydrochloric or tartaric acid, when a blue color should not be developed. In the presence of iodate, both iodic and hydriodic acids would be liberated, and reacting with each other would set iodine free. On adding to the aqueous solution a solution of nitrate of silver, a pale yellowish precipitate is occasioned, which, after decanting the liquor, and on its being agitated with ammonia, yields by subsidence a clear liquid, in which excess of nitric acid should cause no precipitate, or only a faint opalescence, owing to the sparing solubility of iodide of silver in ammonia. *Chloride* and *bromide* of silver being more freely soluble in ammonia, if present, would occasion a curdy white precipitate on the addition of nitric acid. *Carbonate* of potassium is indicated by the alkaline reaction of the salt upon moist test-paper; its presence is proven by the white turbidity occasioned in the aqueous solution on the addition of clear lime-water. Carbonate and sulphate of potassium are insoluble in eighty per cent. alcohol, which dissolves only small quantities of bromide and chloride of potassium. An adulteration of the iodide with more than mere traces of the last two salts may be detected by treating the iodide with eight times its weight of warm alcohol of specific gravity .85, and, after cooling, testing the undissolved portion. These adulterations may be estimated from the silver precipitate, which from ten grains of iodide of potassium weighs 14.15 grains, from the same quantity of bromide 15.8, and from the same quantity of chloride 19.2 grains. Moreover, the last two may be extracted from the former by ammonia, and, after acidulating this solution with nitric acid, collected and weighed separately.

Preparation for Homœopathic Use.—One part by weight of pure iodide of potassium is dissolved in fifty parts by weight of alcohol. Amount of drug power, $\frac{1}{100}$.

Dilutions must be prepared as directed under Class V— β .

Triturations of pure iodide of potassium are prepared as directed under Class VII, but the 1x will not keep well.

KALI MURIATICUM.

Synonyms, Chloras Kalicus. Kali Chloricum. Kali Chloridum. Potassii Chloridum.

Common Names, Chlorate of Potash. Chloride of Potassium.

Formula, K Cl.

Molecular Weight, 74.5.

Preparation of Chloride of Potassium.—It is now obtained in large quantities at Stassfurt from *carrollite*, a double chloride of potassium and magnesium. It may also be prepared by neutralizing hydrochloric acid with carbonate of potassium.

Properties.—It forms white or colorless cubes, or quadrangular prisms, which have a saline taste resembling that of table salt, and which are fusible without decomposition. It imparts a violet color to

flame, dissolves in three parts of cold and two parts of hot water, is slightly soluble in alcohol, but is insoluble in absolute alcohol.

Tests.—The solution is precipitated by perchloride of platinum, and gives with nitrate of silver a white precipitate soluble in ammonia but insoluble in nitric acid, but gives no precipitate with chloride of barium.

Preparation for Homœopathic Use.—The pure chloride of potassium is prepared by trituration, as directed under Class VII.

KALI NITRICUM.

Synonyms, Nitras Kalicus. Nitrate of Potassium. Nitrum. Potassæ Nitras. Potassii Nitras.

Common Names, Nitrate of Potash. Nitre. Saltpetre.

Formula, KNO_3 .

Molecular Weight, 101.

Origin and Preparation of Nitrate of Potassium.—Saltpetre is produced near the surface of the earth wherever nitrogenous organic substances are undergoing decomposition in the presence of air, moisture, and potassium compounds. It is present in considerable quantities in the calcareous soil near dwellings of some parts of India. This soil becomes impregnated with urine, and after it has been exhausted of its soluble salts, soon generates them again, the decomposition being hastened by the hot and moist climate. In several parts of Europe, nitrates are formed in a precisely analogous manner, either by collecting the urine of domestic animals in ditches which have been previously filled with a porous calcareous earth, or by mixing in the so-called *saltpetre beds*, animal and vegetable substances with wood ashes and marl or other material containing lime. This mixture is formed into mounds which are occasionally moistened with drainings from the dung-pit, until after two or three years the salt accumulates in the outer layer of the heap, which is then removed, lixiviated with water, and left in contact with wood ashes in order to decompose the nitrates of calcium and magnesium which are usually present. In India, which furnishes the greater part of the nitre, the process of exhausting the earth is very similar, except that it is usually packed upon wood ashes, and the whole lixiviated. In the Mammoth Cave of Kentucky, and in other localities of the United States, saltpetre has occasionally been procured, and it may be obtained in variable quantities from most soils where vegetable and animal materials have been decaying, from which it is taken up by the plants growing there, some of which are very rich in this salt. A. Boutin (1874) ascertained that *Amarantus melancholicus ruber* contains 16, and *Am. atropurpureus* even 22.77 per cent. of potassium nitrate calculated for the dry herb. The same salt crystallizes in some old extracts.

Since the Stassfurt mines have been worked, the large quantities of chloride of potassium obtained have also been utilized in the production of saltpetre, by a process of mutual decomposition effected with native nitrate of sodium (Chili saltpetre). Equivalent quantities of the two salts are boiled together with water until the chloride of sodium

commences to separate in the boiling liquor, which is then concentrated, and the chloride removed as it crystallizes. On the cooling of the solutions the crystallization of the nitre is usually disturbed by frequent stirring in order to better drain off the mother-liquor in which most of the foreign salts remain dissolved. Variable quantities of these salts, and particularly of sodium and potassium chlorides, are always found in crude nitre, which for further purification is redissolved in water, and granulated by evaporation and stirring. The last portions of adhering chlorides are in some places removed by percolating the granular powder with a concentrated solution of nitre in which they are dissolved, while the nitrate is recovered by boiling the solution and removing the sodium chloride as it separates.

Most of the saltpetre used in the United States is purified here from the foreign crude article, of which during the year 1876-1877 nearly ten and one-third million pounds were imported, besides 549,039 pounds of refined and partly refined nitrate of potassium.

Properties.—Nitrate of potassium crystallizes in colorless, transparent, six-sided striated prisms, which frequently have cavities in the interior filled with mother-liquor, so that on trituration they yield a damp powder. It is often kept in the granulated state, and is then a white crystalline powder. When heated to 339° C. (642.2° F.), it fuses to a colorless liquid, and congeals again on cooling to a radiating crystalline mass; in the presence of even a small proportion of chloride of sodium, the radiating arrangement is less distinct, at least in the centre of the mass, or entirely wanting. At a higher temperature it gives off oxygen, and afterwards oxygen and nitrogen, being gradually converted into nitrate, oxide, and peroxide of potassium. It is neutral to test-paper, has a pungently saline and cooling taste, and dissolves in water with a marked diminution of temperature; 100 parts of water dissolve at 10° C. (50° F.) 21.1, at 20° C. (68° F.) 31.2, at 30° C. (86° F.) 44.5, at 100° C. (212° F.) 247, and at 114.1° C. (337.4° F.), the boiling temperature of the most concentrated solution, 227.4 parts of nitrate of potassium. It is insoluble in absolute, and sparingly soluble in dilute alcohol. It is permanent in the air, but, according to Mulder (1864) absorbs a considerable amount of water when kept in a confined atmosphere saturated with moisture. When thrown upon red hot coal it deflagrates. Warmed with sulphuric acid and copper, it evolves red nitrous vapors; and its solution, acidulated with hydrochloric acid, yields a yellow precipitate with perchloride of platinum.

Tests.—The aqueous solution of the salt is not affected by chloride of barium (absence of *sulphate*), nitrate of silver (*chloride*), carbonate of ammonium (*calcium salt*), or after the addition of carbonate of ammonium by phosphate of ammonium (*magnesium salt*). When mixed with a little potassium carbonate and afterwards with solution of antimoniate of potassium, a white precipitate should not be produced (absence of *sodium salt*). On mixing 101 grains (1 molecule) of nitrate of potassium with an excess of sulphuric acid, evaporating to dryness and igniting, the residue consists of sulphate of potassium and

should weigh 87 grains ($\frac{1}{2}$ molecule). In the presence of nitrate of sodium, the weight is less.

Preparation for Homœopathic Use.—One part by weight of pure nitrate of potassium is dissolved in nine parts by weight of distilled water.

Amount of drug power, $\frac{1}{10}$.

Dilutions must be prepared as directed under Class V-a.

Triturations of pure nitrate of potassium are prepared as directed under Class VII.

KALI PERMANGANICUM.

Synonyms, Kali Hypermanganicum Crystallizatum. Potassæ Permanganas. Potassii Permanganas. Permanganate of Potassium.

Common Name, Permanganate of Potash.

Formula, $K_2 Mn_2 O_8$.

Molecular Weight, 316.

Preparation of Permanganate of Potassium.—Take of caustic potash, five ounces; black oxide of manganese in fine powder, four ounces; chlorate of potash, three and a half ounces; diluted sulphuric acid, a sufficiency; distilled water, two and a half pints. Reduce the chlorate of potash to fine powder, and mix it with the oxide of manganese; put the mixture into a porcelain basin, and add to it the caustic potash, previously dissolved in four ounces of water. Evaporate to dryness on a sand-bath, stirring diligently to prevent spurting. Pulverize the mass, put it into a covered Hessian or Cornish crucible, and expose it to a dull red heat for an hour, or till it has assumed the condition of a semi-fused mass. Let it cool, pulverize it, and boil with a pint and a half of the water. Let the insoluble matter subside, decant the fluid, boil again with half a pint of the water, again decant, neutralize the united liquors accurately with the diluted sulphuric acid, and evaporate till a pellicle forms. Set aside to cool and crystallize. Drain the crystalline mass, boil it in six ounces of the water and strain through a funnel, the throat of which is lightly obstructed by a little asbestos. Let the fluid cool and crystallize, drain the crystals, and dry them by placing them under a bell-jar over a vessel containing sulphuric acid.

Properties.—Permanganate of potassium is in dark purple, nearly black, prismatic crystals, which are without odor, and have a sweet, astringent taste. A small quantity of it imparts to a large quantity of water a rich purple tint, which is destroyed by organic matter and deoxidizing agents. It requires sixteen parts of cold and two parts of boiling water for solution.

Tests.—Five grains of the salt dissolved in water are completely decolorized by a solution of not less than forty-four grains of pure ferrous sulphate, acidulated with two fluidrachms of diluted sulphuric acid. This test depends upon the oxidation of ten molecules (2780) of ferrous to ferric sulphate by one molecule (316) of pure permanganate of potassium. A dilute solution of the latter is not precipitated by nitrate of barium or of silver (absence of sulphate and chloride).

Preparation for Homœopathic Use.—One part by weight of pure permanganate of potassium is dissolved in ninety-nine parts by weight of distilled water.

Amount of drug power, $\frac{1}{100}$.

Dilutions must be prepared as directed under Class V— β , except that they must be freshly prepared as required.

Owing to its decomposition with organic matter permanganate of potassium should not be prepared by trituration.

KALI PHOSPHORICUM.

Synonyms, Potassii Phosphas. Phosphate of Potassium.

Common Name, Phosphate of Potash.

Formula, $K_2 HPO_4$.

Molecular Weight, 174.

Preparation of Phosphate of Potassium.—This may be obtained from calcined bones in precisely the same manner as phosphate of sodium (see Natrum Phosph.), only substituting in the process carbonate of potassium for carbonate of sodium. It is likewise obtained by adding carbonate of potassium to dilute phosphoric acid until the liquid has a slight alkaline reaction, and by evaporating.

Properties.—The so-called neutral phosphate of potassium or dipotassium orthophosphate is with difficulty obtained in irregular crystals; usually it is a white amorphous mass, of a saline taste, deliquescent in the air, and freely soluble in water. On the application of heat it melts, and at a red heat is converted into pyrophosphate of potassium, which is likewise very deliquescent.

Tests.—When dissolved in water, it yields with nitrate of silver a yellow precipitate soluble in nitric acid, and with tartaric acid a white crystalline precipitate of cream of tartar.

Preparation for Homœopathic Use.—Phosphate of potassium is prepared by trituration as directed under Class VII.

KALI SULPHURICUM.

Synonyms, Kali Sulphas. Potassæ Sulphas. Potassii Sulphas. Potassium Sulphate.

Common Name, Sulphate of Potash.

Formula, $K_2 SO_4$.

Molecular Weight, 174.

Preparation of Sulphate of Potassium.—This salt is obtained as a secondary product in many chemical processes, such as the preparation of iodine from kelp; of nitric acid from potassium nitrate; of hydrochloric acid from potassium chloride; and the purification of potash, etc. In the manufacture of the products of the Stassfurt mines, it is obtained by decomposing potassium chloride with a hot concentrated solution of schoenite (sulphate of magnesium and potassium), and by separating the sulphate of potassium from the double chloride of potassium and magnesium, which is formed at the same time, before the latter can crystallize.

Properties.—Sulphate of potassium crystallizes in transparent, colorless, and hard six-sided prisms, or pyramids, or combinations of the two forms. It has the specific gravity 2.65, dissolves in ten parts of cold and four parts of boiling water, is insoluble in alcohol, and dissolves in 500 parts of diluted alcohol. The solution has a slight saline and bitterish taste, is neutral to test-paper, and when acidulated with hydrochloric acid gives with barium chloride a white, and with platinic chloride a yellow precipitate. When heated it decrepitates strongly, and when mixed with an excess of chloride of ammonium and ignited, leaves potassium chloride. It imparts a purple color to the flame.

Tests.—The solution of sulphate of potassium is not affected by sulphuretted hydrogen or sulphhydrate of ammonium (absence of *heavy metals*); nor is it precipitated by oxalate of ammonium (*calcium*), antimoniate of potassium (*sodium*), or by nitrate of silver (*chloride*).

Preparation for Homœopathic Use.—The pure sulphate of potassium is prepared by trituration, as directed under Class VII.

KALMIA.

Synonym, *Kalmia Latifolia*, Linn.

Nat. Ord., Ericaceæ.

Common Names, Laurel. Mountain Laurel.

This is an evergreen shrub found growing on rocky hills and damp soil, rather common from Maine to Ohio and Kentucky, four to eight feet high; but in the mountains from Pennsylvania southward forming dense thickets, and often growing to the height of 10 to 20 feet. Leaves mostly alternate, bright green both sides, ovate-lanceolate or elliptical, tapering to each end, petioled; corymbs terminal, many-flowered, clammy pubescent; pod depressed, glandular. The flowers appear in May and June, profuse, large and very showy, varying from deep rose-color to nearly white.

Preparation.—The fresh leaves, collected when flowering, are chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, pour it into a well-stoppered bottle and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, †.

Dilutions must be prepared as directed under Class III.

KAMALA.

Synonyms, *Croton Coccineus*. *Mallotus Philippinensis*. *Rottlera Tinctoria*, Roxburgh.

Nat. Ord., Euphorbiaceæ.

Common Name, Kameela.

This is a small tree from fifteen to twenty feet in height, growing throughout Hindostan, in several of the East India Islands, and, it is said, in China and Australia. The fruit is a roundish three-valved,

three-celled capsule, of about the size of a small cherry, marked externally with three furrows, and thickly covered with a red powder. This is the officinal part of the plant. The capsules are gathered in February and March, when full-grown, and the powder carefully brushed from them. Kameela as brought to our market, is a light, finely granular, and very mobile powder, of a brownish-red or madder color, with little smell or taste, but producing a slight sense of acrimony in the mouth, and feeling gritty under the teeth. It is inflammable, and flashes almost like gunpowder when dropped into a flame.

Preparation.—The kameela powder is covered with five parts by weight of alcohol, and having poured it into a well-stoppered bottle, it is allowed to remain eight days in a dark, cool place, being shaken twice a day. It is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{16}$.

Dilutions must be prepared as directed under Class IV.

Triturations are prepared as directed under Class VII.

KAOLINUM.

Synonyms, Kaolin. Alumina Silicata.

Common Names, Porcelain or China Clay.

This is a mixture of aluminous and silicious earth, to be found in nature filling hollows like layers between granite and other rocks, and distinguishing itself from other aluminous earths by its being free from iron, of quite white color or only pale colored. The most excellent occurs in the mountains near Misnia in Saxony, near Passau in Bavaria, and near Karlsbad in Bohemia.

Preparation.—Kaolin is first reduced to powder by pounding, carefully washed with distilled water, and then triturated as directed under Class VII.

KINO.

Synonyms, *Butea Frondosa*. *Erythrina Monosperma*. *Pterocarpus Marsupium*, *De Candolle*.

Nat. Ord., Leguminosæ.

Common Names, Australian Red Gum. Buja. Dhak Tree.

The kino tree, called *biya* in Bengal, is about sixty feet high, has numerous spreading branches, a red inner bark, unequally pinnate deciduous leaves, yellowish flowers in loose racemes, and nearly orbicular and winged pods, which contain a single kidney-shaped seed. It is indigenous to India and Ceylon, and, on incisions being made through the bark, yields a red juice, which is dried by exposure to the air and sun.

East India or Malabar kino is met with in small, angular, dark red, glistening, and brittle pieces, which in thin layers are transparent, and of a ruby-red color; it softens between the teeth, is inodorous, and has a very astringent and sweetish taste.

Preparation.—The inspissated juice, obtained from incisions made in the trunk, finely powdered, is covered with five parts by weight of alcohol, and allowed to remain eight days in a well-stoppered bottle, in

a dark, cool place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{16}$.

Dilutions must be prepared as directed under Class IV.

KRAMERIA.

Synonym, *Krameria Triandra*, Ruiz et Pavon.

Nat. Ord., Polygalææ.

Common Names, Mapato. Pumacuchu. Ratanhia. Rhatany.

The rhatany plant is a shrub, having a long, much-branched, spreading root, of a blackish-red color; with a round, procumbent, very dark colored stem, divided into numerous branches, of which the younger are leafy and thickly covered with soft hairs, giving them a white, silky appearance. The leaves are few, sessile, oblong-ovate, pointed, entire, presenting on both surfaces the same silky whiteness with the young branches. The flowers are lake-colored, and stand singly on short peduncles at the axils of the upper leaves. There are only three stamens. The nectary consists of four leaflets, of which the two upper are spatulate, the lower roundish and much shorter. The fruit is globular, of the size of a pea, surrounded by stiff reddish-brown prickles, and furnished with one or two seeds. The name *rhatany* is said to express, in the language of the Peruvian Indians, the creeping character of the plant.

This species of *krameria* is a native of Peru, growing in dry argillaceous and sandy places, and abundant about the city of Huanuco. It flowers at all seasons, but is in the height of its bloom in October and November. The root is dug up after the rains.

Preparation.—The dried root, finely powdered, is covered with five parts by weight of alcohol, and allowed to remain eight days in a well-stoppered bottle, in a dark, cool place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{16}$.

Dilutions must be prepared as directed under Class IV.

KREOSOTUM.

Synonym, Creosotum.

Common Names, Creasote. Kreosote.

Origin and Preparation.—Kreosote, which was discovered by Reichenbach (1830), is one of the numerous products resulting from the dry distillation of wood. According to Voelckel it is not produced from cellulose, but rather from the incrusting layers of the wood cells. Crude wood vinegar is stated to contain about one per cent., but beech-wood tar occasionally twenty-five per cent. of it; the latter being, therefore, the best material for its preparation. To obtain it the tar is distilled until about one-half is passed over, and dense vapors of paraffin, etc., make their appearance. The distillate separates into a heavy and light oily layer, with an intervening aqueous stratum of an acid reaction. The light oil is mainly *eupion*. The heavy oil is treated

with a concentrated solution of sodium carbonate, and the separated oily liquid distilled; that portion of the distillate being collected only which is heavier than water. This distillate is treated with potassa solution, spec. gr. 1.12, whereby the kreosote is dissolved and *eupion* separated. The potassa solution is now supersaturated with sulphuric acid, the precipitated kreosote well washed with water and rectified, the product distilling at and above 203° C. (397° F.) being collected. The treatment with potassa and sulphuric acid is repeated until the potassium kreosote solution does not turn brown on being heated in the air.

To obtain it from crude pyroligneous acid, the oily constituents are first separated by saturating the crude acid with sodium sulphate at about 70° C. (158° F.), and, while warm, skimming off the supernatant layer. The cold thick oil is distilled, treated with sodium carbonate, and further purified as before.

Properties.—Kreosote is a colorless oily liquid; age renders it slightly yellowish; it is very refractive to light, neutral to test-paper, of a peculiar penetrating smoky odor, and of a caustic and burning taste. It boils at about 203° C. (397° F.), and volatilizes without leaving any residue. It does not solidify at -27° C. (-17° F.). Its specific gravity is 1.046 U. S., 1.071 Br. It dissolves in about 80 parts of cold water and in 24 parts of hot water, the excess being separated again after several days. It takes up fifty per cent. of glycerine or fifteen per cent. of ammonia, spec. gr. 0.940, and is freely soluble in alcohol, ether, carbon bisulphide, glacial acetic acid, fixed and volatile oils. When agitated with ammonia water, it separates unchanged on standing, but it dissolves in potassa solution, the liquid giving off kreosote when heated to boiling. When ignited it burns with a white and sooty flame. It causes precipitates with solutions of gum and albumen, but not with gelatin, and does not render collodion gelatinous. It preserves meat, probably in consequence of its behavior with albumen, and is present in the smoke of burning wood. Kreosote is decomposed by strong nitric and sulphuric acids, and in contact with silver nitrate the latter is reduced.

Tests.—It is obvious that unfailing tests can hardly be expected for a variable mixture of compounds some of which are still unknown; yet since guaiacol is the principal constituent, the tests for this principle are generally applicable, or rather the absence of the impurities which are likely to be present may be proven by the non-appearance of their characteristic reactions. Thus the absence of *fixed oils* is shown by the complete volatility of the sample; a drop may be put upon bibulous paper, and this exposed to a temperature near 100° C. (212° F.), when the greasy stain should gradually completely disappear. For the absence of *carbolic acid* the United States Pharmacopœia offers two tests: 1. That it should not coagulate collodion; and 2. That a slip of pine wood dipped first into an alkaline solution of kreosote, and, after drying, into hydrochloric acid, should not acquire a blue color (see *Acidum Carbolicum*). The first test will not detect small quantities of carbolic acid, and perhaps the best test for distin-

guishing between the two articles is their behavior with ferric chloride, which for both beechwood-tar kreosote and carbolic acid may be very similar, when in a concentrated state or in alcoholic solution, but is markedly different in dilute aqueous solution. A clear watery solution of beechwood-tar kreosote acquires with little ferric chloride a blue, then brown, and finally yellowish or yellowish-green turbidity; a similar solution of carbolic acid gives a blue or violet coloration. On adding a strong solution of ferric chloride to a strong alcoholic solution of kreosote, a blue and then a green color is produced; with a similar solution of carbolic acid, the coloration will be at first blue, then brown, or, in certain proportions, green; if now six or eight times the bulk of water be added, the kreosote mixture will become dingy brown, with the separation of minute oily drops; but the carbolic acid mixture will remain perfectly transparent, and acquire a beautiful blue color.

It should be stated that much of the commercial kreosote is coal-tar kreosote, and readily recognizable as such by its behavior to ferric chloride.

Preparation for Homœopathic Use.—One part by weight of pure beechwood-tar kreosote is dissolved in fifty parts by weight of alcohol.

Amount of drug power, $\frac{1}{100}$.

Dilutions must be prepared as directed under Class VI— β .

LACERTA AGILIS.

Synonym, *Lacerta Stirpium*.

Class, Reptilia.

Order, Sauria.

Family, Lacertina.

Common Name, Green European Lizard.

The green lizard is frequently met with in southern Europe, in some parts of Africa and in Sweden. It is not poisonous; it will bite, but the wounds are not dangerous. It has been reputed of old to be an antidote against all poisons, and is yet used occasionally as a popular remedy.

There seems to be some doubt as to the proper preparation; while some prepare a tincture from the fresh pounded lizard, others recommend a trituration from the dried animal.

Preparation.—The entire dried animal is prepared by trituration, as directed under Class VII.

LACHESIS.

Synonym, *Trigonocephalus Lachesis*.

Class, Reptilia.

Order, Ophidia.

Family, Crotolidæ.

Common Name, Surukuke or Churukuku.

The lachesis or trigonocephalus inhabits the hot countries of South America; it attains a length of upwards of seven feet, and its poison-

fangs are nearly one inch in length; the skin is of a reddish-brown, marked along the back with large rhomboidal spots of a blackish-brown, each of which encloses two spots of the color of the body. The poison resembles saliva, only it is less viscous, but limpid, inodorous, and without any marked taste, the color being somewhat greenish; at the extremity of the fang, it easily forms into drops, and falls without threading; exposed to the air, it soon concentrates into a dry yellow mass, which for a long time preserves its poisonous qualities. The poison of this serpent has this peculiarity, that it may be swallowed without inconvenience, whilst, introduced into a wound, or injected into a vein, it produces the most dreadful symptoms, and generally death. The virus of this serpent has been more carefully proved than that of any other. The specimen used by Dr. Hering in his experiments was obtained from the living snake, which was stunned with a blow; the poison was then collected on sugar by pressing the poison fang upwards against the bag, and the three first attenuations prepared by trituration.

Preparation.—The virus is triturated as directed under Class VIII.

LACHNANTHES.

Synonym, *Lachnanthes Tinctoria*, *Elliott*.

Nat. Ord., *Hæmodoraceæ*.

Common Names, Red-Root. Spirit Weed.

This herb grows in sandy swamps, from Rhode Island and New Jersey southward, near the coast. It has a red fibrous perennial root, equitant sword-shaped leaves, clustered at the base and scattered on the stem, which is hairy at the top, and terminated by a dense compound cyme of dingy yellow and loosely woolly flowers. Perianth woolly outside, six-parted down to the adherent ovary. Stamens three, opposite the three larger or inner divisions; filaments long, exerted; anthers linear, fixed by the middle. Style thread-like, exerted, declined. Pod globular. Seeds few on each fleshy placenta, flat and rounded, fixed by the middle. Flowers appear from July to September.

Preparation.—The fresh plant in flower is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, pour it into a well-stoppered bottle, and let it stand eight days in a dark, cool place. The tincture is separated by decanting, straining and filtering.

Amount of drug power, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

LACTUCA SATIVA, *Linn.*

Synonyms, *Lactuca Crispa*. *Lactuca Sylvestris*.

Nat. Ord., *Compositæ*.

Common Name, Garden Lettuce.

This is an annual plant. The stem, which rises about two feet, is erect, round, simple below, and branching in its upper part. The lower

leaves are obovate, rounded at the end, and undulating; the upper are smaller, sessile, cordate, and toothed; both are shining, and of a yellowish-green color. The flowers are pale yellow, small, and disposed in an irregular terminal corymb. Before the flower-stem begins to shoot, the plant contains a bland, pellucid juice, has little taste or smell, and is much used as a salad for the table; but during the period of inflorescence it abounds in a milky juice, which readily escapes from incisions in the stem. The original native country of the garden lettuce is unknown. The plant has been cultivated from time immemorial, and is now employed in all parts of the civilized world. It flourishes equally in hot and temperate latitudes.

Preparation.—The fresh, perfectly developed plant, grown in the garden, is chopped and pounded to a pulp, and pressed out *lege artis* in a piece of new linen. The expressed juice is then, by brisk agitation, mingled with an equal part by weight of alcohol. This mixture is allowed to stand eight days, in a well-stoppered bottle, in a dark, cool place, and then filtered.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class I.

LACTUCA VIROSA, *Linn.*

Synonyms, Intybus Augustus. *Lactuca Fœtida.*

Nat. Ord., Compositæ.

Common Name, Acrid or Strong-scented Lettuce.

This is a biennial, with a stem from two to four feet high, erect, prickly near the base, above smooth and divided into branches. The lower leaves are large, oblong-ovate, undivided, toothed, commonly prickly on the under side of the midrib, sessile, and horizontal; the upper are smaller, clasping, and often lobed; the bractes are cordate and pointed. The flowers are numerous, of a sulphur-yellow color, and disposed in a panicle. The plant is a native of Europe. It is lactescent, and has a strong disagreeable smell like that of opium, and a bitterish, acrid taste.

Preparation.—The fresh plant is chopped and pounded to a pulp, and pressed out *lege artis* in a piece of new linen. The expressed juice is then, by brisk agitation, mingled with an equal part by weight of alcohol. This mixture is allowed to stand eight days, in a well-stoppered bottle, in a dark, cool place, and then filtered.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class I.

LACTUCARIUM.

Synonyms, *Lactuca Sativa*, *Linn.* *Lactuca Virosa*, *Linn.*

Preparation of Lactucarium.—Commerce is supplied with lactucarium almost exclusively from Germany and Great Britain, from plants cultivated for the purpose. Thos. Fairgrieve, who described the preparation in 1873, states that he cultivates *Lactuca Virosa* var. *Montana*. The collection of the milky juice is commenced about the

middle of July or beginning of August, when the flowers are just appearing, and is continued for six or eight weeks (until the latter part of September). The collectors proceed over the field, cutting the head of each stalk and scraping the juice into their vessels, one person who cuts being followed by two who collect the juice. This process is repeated six or seven times a day, a new cut being made each time a little lower down the stalk. In the evening, when the juice has thickened into a viscous mass, it is turned out of the vessel, suitably divided, and dried by the aid of heat, about five days being required for it.

In Germany, near the town of Zell on the Mosel, the collection lasts from May to September; the milky juice is taken up by the finger and transferred to hemispherical earthen cups, in which it quickly hardens so that it can be turned out. It is then dried in the sunshine until it can be cut into four pieces, when the drying is completed by exposure to the air for some weeks on frames.

German lactucarium generally comes in sections of plano-convex circular cakes which are of a gray-brown color externally, usually white or yellowish, and of a waxy lustre internally. It has a strongly bitter taste, and a strong narcotic odor suggesting that of opium.

Preparation for Homœopathic Use.—The dried milk-juice is triturated, as directed under Class VII.

LAMIUM ALBUM, *Linn.*

Synonyms, Gallopsidis Maculata. *Lamium Lævigatum.*

Nat. Ord., Labiatae.

Common Names, Dead Nettle. White Archangel.

This herb is a native of Europe, where it is very common, growing on walls, hedges, fences and the edges of meadows. It has ovate, heart-shaped, pointed and coarsely serrate, somewhat hairy, petiolate leaves, and white or whitish flowers in dense axillary clusters, and with slender calyx teeth; at base of corolla, inside, there is a ring of hairs. Flowers appear continually from spring to autumn.

Preparation.—Two parts of fresh leaves and one part of fresh blossoms are chopped and pounded to pulp and pressed out in a piece of new linen. The expressed juice is then, by brisk agitation, mingled with an equal part by weight of alcohol. This mixture is allowed to stand eight days in a well-stoppered bottle, in a dark, cool place, and then filtered.

Amount of drug power, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class I.

LAPATHUM ACUTUM.

Synonym, *Rumex Obtusifolius, Linn.*

Nat. Ord., Polygonaceæ.

Common Name, Bitter Dock.

This plant is a native of Europe, but has been introduced into America, where it is found growing in fields, etc. Stem roughish; low-

est leaves ovate-heart-shaped, obtuse, rather downy on the veins underneath, somewhat wavy-margined; the upper oblong-lanceolate, acute; whorls loose and distant; valves ovate-halberd-shaped, and with some sharp awl-shaped teeth at the base, strongly reticulated, one of them principally grain-bearing; these characteristics distinguish this species from all others.

Preparation.—The fresh root, gathered in autumn, is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, pour it into a well-stoppered bottle and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Amount of drug power, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

LAPIS ALBUS.

Synonym, Silico-Fluoride of Calcium.

This name, Lapis Albus, is given by Dr. v. Grauvogl, to an unnamed species of *gneiss*, which he first found held in suspension in the waters of the mineral springs of Gastein, Germany. These springs start from the foot of the Tauern Mountains, and flow downward into the valley of the Achen, over formations of *gneiss*.

The substance proved was a trituration of the solid *gneiss* rock. Dr. v. Grauvogl calls it a white, primitive, calcium *gneiss*. Until a careful scientific analysis of the rock used by v. Grauvogl is made, we must only consider as official, triturations of the *gneiss* from the springs of Gastein, Germany.

Preparation.—Genuine Lapis Albus is trituated, as directed under Class VII.

LAUROCERASUS.

Synonyms, *Cerasus Folio Laurino*. *Padus Laurocerasus*. *Prunus Laurocerasus*, *Linn.*

Nat. Ord., Rosacæ.

Common Name, Cherry Laurel.

This tree is indigenous to Persia and Asia Minor. It is an evergreen, rising from four to twenty feet in height, with long spreading branches, which, as well as the trunk, are covered with a smooth, blackish bark; the leaves standing alternately on short, strong footstalks, are oval-oblong, from five to seven inches in length, acute, finely serrated, firm, coriaceous, smooth, beautifully green and shining, with oblique nerves and yellowish glands at the base; the flowers are small, white, strongly odorous, and disposed in simple axillary racemes; the fruit consists of oval drupes, very similar to small black cherries, both in their shape and internal structure. The fresh leaves have an aromatic odor and taste, very like the bitter almond.

Preparation.—The mature fresh leaves, gathered in the summer

months, are chopped and pounded to a pulp and weighed. Take two-thirds by weight of alcohol, and add it to the pulp, stirring and mixing well together; then strain *lege artis* through a piece of new linen. The tincture thus obtained is allowed to stand eight days in a well-stoppered bottle, in a dark, cool place, and then filtered.

Drug power of tincture, $\frac{1}{4}$.

Dilutions must be prepared as directed under Class II.

LEDUM.

Synonyms, Anthos Sylvestris. *Ledum Palustre*, Linn. *Rosmarinum Sylvestre*.

Nat. Ord., Ericaceæ.

Common Names, Marsh Tea. Wild Rosemary.

This is a small evergreen shrub two to three feet high. Stem shrubby, erect, slender, much branched, young branches covered with close rust-colored down. Leaves scattered, horizontal or reflexed, on short petioles, strap-shaped, quite entire, with revolute margins, channeled, smooth; upper surface dark green, under surface paler, and the midrib covered with rust-colored down. Flowers numerous, in dense, simple, terminal, bracteated corymbs. The whole plant, when bruised, has a strong, oppressive, aromatic smell, and a bitter, astringent, nauseous taste. It grows in moist swampy grounds in north of Europe, France, Asia and America.

Preparation.—The fresh herb is pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and after thoroughly mixing the pulp with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, pour it into a well-stoppered bottle and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{6}$.

Dilutions must be prepared as directed under Class III.

LEPIDIDIUM BONARIENSE, De Candolle.

Synonym, *Lepidium Mastruco*.

Nat. Ord., Cruciferae.

Common Names, Buenos Ayres Pepperwort. *Mastruco*.

This plant is very common in the neighborhood of Rio, where it is found along the roads and in stony regions. It is herbaceous, with numerous glabrous, erect stems, attaining a height of from twenty to thirty inches; the radical leaves are petiolate, finely indented; the superior leaves are alternate, sessile and almost linear. It blossoms in September. The flowers, which form terminal spikes, are supported by filiform pedicles; calyx with four folioles; corolla small, cruciform, with four hypogynous petals, six tetradynamous stamens, short style, small, subelliptical pod, which is somewhat crenated at the top; root fibrous, simple, erect.

Preparation.—The fresh leaves are chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken,

and having mixed the pulp with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, and poured it into a well-stoppered bottle, it is allowed to stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

LEPTANDRA.

Synonyms, *Callistachya Virginica*. *Eustachya Alba*. *Leptandra Virginica*, *Nuttall*. *Veronica Virginica*, *Linn*.

Nat. Ord., Scrophulariaceæ.

Common Names, Black Root. Culver's Root. Tall Speedwell. Tall Veronica.

This is an herbaceous perennial plant, with a simple, erect stem, three or four feet high, smooth or downy, furnished with leaves in whorls, and terminating in a long spike of white flowers. The leaves, of which there are from four to seven in each whorl, are lanceolate, pointed, and minutely serrate, and stand on short footstalks. Calyx five-parted, segments acuminate. Corolla tubular-campanulate, border four-lobed, a little ringent, unequal, the lower lamina narrower. Stamens and at length the pistils much exserted; filaments below, and tube of the corolla pubescent. Capsule ovate, acuminate, two-celled, many-seeded, opening at the summit. The plant grows throughout the United States east of the Mississippi, affecting mountain meadows in the South, and rich woods in the North. Flowers appear in July and August.

Preparation.—The fresh root, of the second year, is chopped and pounded to a pulp. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, it is poured into a well-stoppered bottle, and allowed to stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

LILIUM TIGRINUM.

Nat. Ord., Liliaceæ.

Common Name, Tiger Lily.

This plant is a native of China and Japan. It is much cultivated as a garden plant. Its stem is from four to six feet high, unbranched and woolly. Leaves scattered, sessile, three-veined, the upper cordate-ovate, the axils bulbiferous. Flowers are large, in a pyramid at the summit of the stem, dark orange-colored, with black or very deep crimson, somewhat raised spots, which give the flower the appearance of the skin of the tiger, and from which circumstance it has derived its name; perianth revolute and papillose within. Its flowers appear in July and August.

Preparation.—The fresh plant, in flower, is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole and poured it into a well-stoppered bottle, it is allowed to stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

LITHIUM BROMICUM.

Synonyms, Lithium Bromatum. Lithium Hydrobromicum. Lithii Bromidum.

Common Name, Bromide of Lithium.

Formula, Li Br.

Molecular Weight, 87.

Preparation and Properties of Bromide of Lithium.—This salt is readily soluble in water and alcohol, 100 parts of the former liquid dissolving at 0° C. (32° F.) 143 parts, and at 34° C. (93.2° F.) 196 parts of the bromide. According to Yvon (1875), it may be prepared by dissolving lithium carbonate in hydrobromic acid and evaporating. Or 37 grams of the carbonate are converted into neutral sulphate, dissolved in a small portion of water, and mixed with a concentrated aqueous solution of 119 grams of potassium bromide. The mixture is well stirred, the liquid separated by filtration, evaporated to dryness, and treated with alcohol, which leaves potassium sulphate undissolved; the alcoholic solution is evaporated to dryness. Lithium bromide may be obtained in crystals by evaporating its syrupy solution over sulphuric acid. The anhydrous salt contains nearly 92 per cent. of bromine.

Preparation for Homœopathic Use.—Bromide of lithium is prepared by trituration, as directed under Class VII.

LITHIUM CARBONICUM.

Synonyms, Carbonas Lithicus. Lithic Carbonate. Lithii Carbonas.

Common Name, Carbonate of Lithium.

Formula, Li₂ CO₃.

Molecular Weight, 74.

Origin and Preparation of Carbonate of Lithium.—Lithium is met with as phosphate in *montebrasite* and several other minerals, and as fluoride or silicate in *lepidolite*, *spodumene*, and others. It is found in minute quantities in the ashes of some plants, and in many mineral springs, often as carbonate; the waters of the Mur-spring at Baden-Baden, and of a hot spring at Wheel-Clifford, in Cornwall, are the richest known; the latter, according to W. A. Miller (1864), containing 26.05 grains Li Cl in the imperial gallon. To prepare the carbonate lepidolite is heated with sulphuric acid; the aqueous solution,

containing impure lithium sulphates, is treated with lime to separate metallic oxides and earths, and then precipitated by potassium carbonate, or neutralized with hydrochloric acid and evaporated. From the residue the chloride of lithium is dissolved by a mixture of alcohol and ether, and thus freed from the chlorides of rubidium, cesium, sodium, and potassium, with which metals it is associated in the lepidolite. The concentrated aqueous solution of lithium chloride, treated with ammonium carbonate, yields a precipitate of lithium carbonate, which is washed with alcohol.

Properties.—Carbonate of lithium is a light white powder, or is in minute crystalline grains, fuses at a dull red heat with the evolution of some carbonic acid, and, after congealing, may be broken into pearly pieces. It is insoluble in alcohol, but dissolves in about one hundred parts of water; the solution precipitates the salts of the heavy metals, and, on boiling, decomposes the ammonium salts. It dissolves with effervescence in dilute hydrochloric acid, and the solution evaporated to dryness leaves a residue of lithium chloride, which imparts a carmine color to the flame of a spirit lamp. The neutral solution of the chloride yields a white precipitate with phosphate of sodium.

Tests.—Magnesium and calcium salts are the principal impurities; salts of heavier metals are rarely present. The salt, dissolved in hydrochloric acid, should yield no precipitate with hydrogen sulphide either before or after neutralization with ammonia. The same solution yields no precipitate with sulphuric acid (*barium*), nor after neutralization with ammonium oxalate (*calcium*), or lime-water (*magnesium*). Ten grains of the salt, neutralized with sulphuric acid and heated to redness, leave 14.86 grains of dry sulphate of lithium. Alkaline impurities are detected, after being converted into chlorides, by their insolubility in a mixture of equal volumes of alcohol and ether, as stated above.

Preparation for Homœopathic Use.—Pure carbonate of lithium is prepared by trituration, as directed under Class VII.

LOBELIA.

Synonyms, *Lobelia Inflata*, *Linn.* *Rapuntium Inflatum*.

Nat. Ord., *Lobeliaceæ*.

Common Names, *Asthma Root.* *Bugle Weed.* *Emetic Herb.* *Indian Tobacco.* *Lobelia.* *Puke Root.*

This species of lobelia is an annual or biennial indigenous plant, usually a foot or little more in height, with a fibrous root and a solitary, erect, angular, very hairy stem, much branched about midway, but rising considerably above the summits of the highest branches. The leaves are scattered, sessile, oval, acute, serrate and hairy. The flowers are numerous, small, disposed in leafy terminal racemes, and upon short axillary footstalks. The segments of the calyx are linear and pointed. The corolla, which is of a delicate blue, has a labiate border, with the upper lip divided into two, the lower into three segments. The united anthers are curved, and enclose the stigma. The fruit is an oval, striated, inflated capsule, crowned with the persistent

calyx, and containing, in two cells, numerous very small, brown seeds. *Lobelia inflata* is a very common weed, growing on the road-sides and neglected fields, throughout the United States. Its flowers begin to appear towards the end of July, and continue to expand in succession till the occurrence of frost.

Preparation.—The fresh plant is pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and after thoroughly mixing the pulp with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, pour it into a well-stoppered bottle and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{4}$.

Dilutions must be prepared as directed under Class III.

LOBELIA CARDINALIS, *Linn.*

Nat. Ord., Lobeliaceæ.

Common Names, Cardinal Flower. Red Lobelia.

This species of lobelia is tall, two to four feet high, stem simple, smoothish; leaves oblong-lanceolate, slightly toothed; raceme elongated, rather one-sided; the pedicles much shorter than the leaf-like bracts. Flowers are very large and deep red color. The plant is very common, found in low ground.

Preparation.—The fresh leaves are chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, and poured it into a well-stoppered bottle, it is allowed to remain eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{4}$.

Dilutions must be prepared as directed under Class III.

LOBELIA SYPHILITICA, *Linn.*

Synonyms, *Lobelia Cerulea*. *Lobelia Glandulosa*.

Nat. Ord., Lobeliaceæ.

Common Names, Blue Lobelia. Great Lobelia.

This plant is two to three feet high, has acute elliptic-oblong, irregularly serrate leaves, and showy blue flowers in the axils of the upper leaves, forming a terminal raceme; the calyx has a short hemispherical tube, five long acute lobes, and at their base conspicuous deflexed appendages. It is met with in low grounds in the United States.

Preparation.—The fresh plant is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, and poured it into a well-stoppered bottle, it is allowed to stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{4}$.

Dilutions must be prepared as directed under Class III.

LOLIUM TEMULENTUM, Linn.

Synonyms, *Lolium Arvense.* *Lolium Robustum.*

Nat. Ord., Graminaceæ.

Common Name, Bearded Darnel. Darnel. Lare.

This is an annual about two and a half feet high, with rather large leaves, and has an elongated inflorescence, the spikelets being nearly an inch long, about seven-flowered, somewhat compressed, alternate, sessile, oppressed to the concave rachis, and about as long as the glumes. The fruit is oblong-ovoid, nearly one-quarter inch long, inclosed in the palea, grooved on the inner and convex on the outer surface, smooth, pale brown, internally white, inodorous, and of a farinaceous, afterwards bitterish, taste. The plant grows on waysides and in grain-fields in Western Asia and throughout Europe.

Preparation.—The ripe seeds are finely powdered, covered with five parts by weight of alcohol, and allowed to remain eight days, in a well-stoppered bottle, in a dark, cool place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{10}$.

Dilutions must be prepared as directed under Class IV.

LUPULINA.

Common Name, Lupulin.

This is the yellow glandular powder separated from the strobiles of *Humulus Lupulus*. See *Lupulus*.

On handling dry hops the glandular powder becomes detached, and is freed from fragments of the bracts, etc., by sifting; about ten per cent. of the weight of the hops may be obtained. Lupulin, when fresh, is a brownish-yellow, afterwards yellowish-brown, granular resinous powder, which has the aromatic odor, and bitter and aromatic taste of hops.

Preparation.—The lupulin is triturated, as directed under Class VII.

LUPULUS.

Synonym, *Humulus Lupulus, Linn.*

Nat. Ord., Urticaceæ.

Common Names, Hops. Hop Vine.

The root of the hop is perennial, and sends up numerous annual angular, rough, flexible stems, which twine around neighboring objects in a spiral direction, from left to right, and climb to a great height. The leaves are opposite, and stand upon long footstalks. The smaller are sometimes cordate; the larger have three or five lobes; all are serrate, of a deep green color on the upper surface, and, together with the petioles, extremely rough, with minute prickles. At the base of the footstalks are two or four smooth, ovate, reflexed stipules. The flowers are numerous, axillary, and furnished with bractes. The male flowers are yellowish-white, and arranged in panicles; the female, which grow on a separate plant, are pale green, and disposed in solitary,

peduncled aments, composed of membranous scales, ovate, acute, and tubular at the base. Each scale bears near its base, on its inner surface, two flowers, consisting of a roundish compressed germ, and two styles, with long filiform stigmas. The aments are converted into ovate membranous cones or strobiles, the scales of which contain, each, at its base, two small seeds, surrounded by a yellow, granular powder. The hop is a native of North America and Europe.

Preparation.—The fresh hop-strobules are chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, and poured it into a well-stoppered bottle, it is allowed to stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

LYCOPERSICUM.

Synonyms, Solanum Lycopersicum, *Linn.* Lycopersicum Esculentum. Poma Amoris.

Nat. Ord., Solonaceæ.

Common Names, Love Apple. Tomato.

This plant is a native of tropical America, but its fruit has come into such high repute, that it is cultivated very extensively. The tomato plant resembles the potato plant in general aspect. It is hairy; stems herbaceous, weak, growing three to four feet high; leaves unequally pinnatifid, segments cut, glaucous beneath; flowers greenish-yellow, of an unpleasant odor; fruit is large and abundant, torulose, furrowed, smooth, at first green, becoming when ripe of a beautiful red, and has an agreeable acrid taste.

Preparation.—The fresh herb beginning to flower, is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, and poured the mixture into a well-stoppered bottle, it is allowed to stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Amount of drug power, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

LYCOPODIUM.

Synonyms, Muscus Clavatus. Pes Leoninus. Pes Ursinus.

Nat. Ord., Lycopodiaceæ.

Common Names, Club-Moss. Stag's Horn. Witch Meal. Wolf's Claw.

The sporules of *Lycopodium Clavatum*, *Linn.*

The common *club-moss* is a low-creeping perennial, which is found in dry woods distributed over the greater portion of the globe, but is

most frequent in northern countries. The stem is two to four feet long, with evergreen imbricated linear awl-shaped inflexed leaves, and with ascending very leafy branches, the fertile ones terminated by a long peduncle bearing two or three erect linear-cylindrical spikes, with roundish ovate bristly pointed bracts, in the axils of which are kidney-shaped sporangia containing the sporules. The spikes are collected before they are fully matured, and after the powder has fallen out, it is separated by a sieve from the other parts. It is collected in Germany and other countries of central Europe. *Lycopodium* is a fine, very mobile, pale yellowish powder, which is free from odor and taste. Examined by the microscope it is found to be rounded on one side, while the other forms a short three-sided pyramid. The entire surface is covered by fine polyhedric meshes, and at the intersection of the ridges by small projections. When slowly heated, *lycopodium* burns quietly, but when thrown into a flame it burns suddenly and with a hissing noise. When triturated it acquires a darker tint, becomes more coherent and greasy. Flückigar (1872) after rupturing the granules by long trituration with sand, obtained 47 per cent. of a bland oil which does not solidify at -15° C. (5° F.).

Preparation.—To obtain an efficacious tincture of *lycopodium*, a previous trituration for hours, first dry, and then with the addition of as much alcohol as is necessary to form a thick paste will be found of great advantage; after this is done sufficient alcohol is added to make five parts by weight of alcohol to each part by weight of *lycopodium* used. This preparation is allowed to remain eight days in a well-stoppered bottle, in a dark, cool place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{10}$.

Dilutions must be prepared as directed under Class IV.

Triturations of *lycopodium* are prepared as directed under Class VII, but the first trituration must be triturated for several hours as the granules are difficult of rupture.

LYCOPUS.

Synonym, *Lycopus Virginicus*, Linn.

Nat. Ord., Labiatae.

Common Names, Bugle-weed. Paul's Betony. Virginia Hoarhound.

This is an indigenous herb, with a perennial creeping root, which sends up an erect, nearly simple, obtusely quadrangular stem, from six to eighteen inches high, and furnished with opposite sessile leaves. These are broad-lanceolate, attenuated and entire at both extremities, remotely serrate in the middle, somewhat rough, purplish, and beset with glandular dots on their under surface. The flowers are minute, in small axillary whorls, with two small subulate bracts to each flower, and a white corolla. Calyx-teeth four, ovate, bluntish and pointless. The seeds are longer than the calyx, which is spineless. This plant grows in shady and wet places throughout the greater part of the United States, especially northward.

Preparation.—The fresh plant, in flower, is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and after thoroughly mixing the pulp with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, and poured it into a well-stoppered bottle, it is allowed to stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

LYSSIN.

Synonym, Hydrophobinum.

The virus of the rabid dog.

Preparation.—The virus is prepared by trituration, as directed under Class VIII.

MADAR.

Synonyms, Calotropis Gigantea, *Brown*. Asclepias Gigantea, *Linn*. Mudar.

Nat. Ord., Asclepiadaceæ.

Under the name of *madar* or *mudar*, a medicine has been employed in the East Indies, with great asserted advantage. It is the bark of the root of a species of calotropis, generally considered as *C. Gigantea*, but said by Dr. Cassanova to be a distinct species, and named by him *C. Madarii Indico-orientalis*. *C. gigantea* is a native of Hindostan, and has been introduced into the West Indies, where it is now naturalized. The bark, as employed, is without epidermis, of a whitish color, nearly or quite inodorous, and of a bitter somewhat nauseous taste.

Preparation.—The recently-dried bark, finely pulverized, is triturated as directed under Class VII.

MAGNESIA CARBONICA.

Synonyms, Carbonas Magnesicus. Magnesii Carbonas. Magnesium Carbonate. Salis Amari.

Common Name, Carbonate of Magnesia.

Formula, $(\text{Mg Co}_3)_3$. Mg O . $4 \text{H}_2 \text{O}$, or 3Mg Co_3 . $\text{Mg } 2 \text{HO}$. $3 \text{H}_2 \text{O}$.

Molecular Weight, 364.

Preparation of Carbonate of Magnesium.—Take of sulphate of magnesia, ten ounces; carbonate of soda, twelve ounces; boiling distilled water, a sufficiency. Dissolve the sulphate of magnesia and the carbonate of soda each in a pint of water, mix the two solutions, and evaporate the whole to perfect dryness by means of a sand-bath. Digest the residue for half an hour with two pints of the water, and having collected the insoluble matter on a calico filter, wash it repeatedly with distilled water until the washings cease to give a precipitate with chloride of barium. Finally, dry the product at a temperature not exceeding 212°F .

Properties—Carbonate of magnesia is a loose, porous, but cohesive, dazzling white mass, inodorous and of a slight earthy taste. It is almost insoluble in water, requiring, according to Fyfe, 2,500 parts of cold and 9,000 parts of boiling water for solution. When it is moistened with water and applied to turmeric-paper, a brown color is gradually produced. When heated to dull redness, water and carbonic acid gas are given off and magnesia remains. It dissolves with effervescence in dilute sulphuric, hydrochloric, and other acids, and the solutions have the chemical behavior of magnesium salts.

Tests.—Impurities are detected by dissolving the carbonate of magnesia in dilute nitric acid, and this solution should not be precipitated by nitrate of silver (*chloride* and *bromide*), or barium nitrate (*sulphate*); neutralized with ammonia, it should not be precipitated by ammonium oxalate (*calcium*). On the addition of ammonia in excess, a white precipitate is produced, which is completely soluble in ammonium chloride (an insoluble portion would indicate *alumina*), and the ammoniacal solution does not yield a white precipitate with hydrogen sulphide (*zinc*).

Preparation for Homœopathic Use.—The pure carbonate of magnesia is triturated as directed under Class VII.

MAGNESIUM METALLICUM.

Synonym, Metal Magnesium.

Symbol, Mg.

Atomic Weight, 24.

Origin and Preparation of Metal Magnesium.—The metal *magnesium* is widely distributed, but is less abundant than calcium; it is found as silicates in *meerschaum*, *olivine*, *mica*, *serpentine*, and other minerals, as chloride in sea-water and the waters of saline springs, and as carbonate in *magnesite* and *dolomite* or magnesium limestone. The metal is obtained by heating sodium with anhydrous magnesium chloride; the resulting sodium chloride is dissolved by water, and the magnesium left behind in the form of a gray powder, which is fused and moulded as desired.

Properties.—It is a silver-white metal, of a strong metallic lustre, malleable, fusing at a red, and volatilizing at a white heat, but burning with a bright white light when held in the flame of a gas jet. Its density is only 1.78; it is not altered in dry air, and but slightly tarnished in a damp atmosphere.

Preparation for Homœopathic Use.—The metal magnesium is triturated as directed under Class VII.

MAGNESIA MURIATICA.

Synonyms, Chloras Magnesicus. Magnesii Chloridum. Magnesium Chloride.

Common Name, Muriate of Magnesia.

Preparation of Muriate of Magnesia.—It is prepared by dissolving carbonate of magnesium in pure muriatic acid until it is

saturated, with the aid of heat. The filtered solution is evaporated with a moderate heat to dryness, and the production obtained, a salt, not quite white, very deliquescent, sandy to the touch, is to be preserved in well-stoppered bottles.

Preparation for Homœopathic Use.—Muriate of magnesia is triturated, as directed under Class VII.

MAGNESIA PHOSPHORICA.

Formula, $2\text{Mg O. P. O}_5. \text{HO} + 14 \text{H}_2 \text{O}.$

Take of sulphate of magnesia two parts, dissolve in thirty-two parts of distilled water, and mix with a solution of three parts of phosphate of soda in thirty-two parts of distilled water; set aside to crystallize.

One part of the crystallized salt is slowly soluble in three hundred and twenty-two parts of cold water.

Preparation for Homœopathic Use.—The salt is triturated according to Class VII.

MAGNESIA SULPHURICA.

Synonyms, Magnesii Sulphas. Magnesium Sulphate.

Common Names, Epsom Salt. Sulphate of Magnesia.

Formula, $\text{Mg SO}_4. 7\text{H}_2 \text{O}.$

Molecular Weight, 246.

Origin and Preparation of Sulphate of Magnesium.—

Sulphate of magnesium is contained in sea-water, and in the waters of many mineral springs, which thereby acquire a bitter taste. The *Crab Orchard salt* of Kentucky is the same salt in an impure state, and, as analyzed by J. T. Viley (1871), contains about sixty-five per cent. of magnesium sulphate after having been dried at $120^\circ \text{C}.$ It probably results from the mutual decomposition of gypsum and magnesian limestone, and is obtained by evaporating the water which collects in wells dug in the ground. The pure salt is made on the large scale from *magnesite*, which is principally Mg CO_3 , by dissolving it in dilute sulphuric acid, and crystallizing.

Properties.—As found in the market magnesium sulphate has generally been purified by resolution in water and rapid crystallization, and forms small rhombic prisms, which resemble those of oxalic acid and sulphate of zinc, are perfectly transparent, without odor, but have a cooling and bitter saline taste. It dissolves at the ordinary temperature in about one and a half times its weight, and on boiling in less than its own weight of water; it is also soluble in diluted alcohol, but sparingly so in strong alcohol. Exposed to air the crystals slowly effloresce, becoming superficially opaque; when heated the salt melts, gives off $6\text{H}_2 \text{O},$ and at a still higher temperature parts with the last molecule of water, fuses, and on cooling congeals into a white mass. The total weight of water amounts to 51.22 per cent.

Tests.—The aqueous solution yields a white precipitate of barium sulphate on the addition of barium chloride. It is not precipitated in the cold by potassium bicarbonate or ammonium carbonate, but gives

white precipitates with the carbonates and the hydrates of sodium and potassium, which are redissolved by ammonium chloride. Ammonia added to its solution likewise causes a white precipitate soluble in ammonium chloride, and this solution, on the addition of ammonium phosphate, deposits all magnesium in the form of a crystalline powder, which is phosphate of magnesium and ammonium, $\text{Mg NH}_4 \text{PO}_4 \cdot 6\text{H}_2\text{O}$. The filtrate from it, evaporated to dryness and ignited, should leave no residue, or only a slight one consisting of phosphoric acid, in which potassium or sodium compounds should not be indicated by the proper tests.

Impurities are detected in precisely the same manner as in the nitric acid solution of magnesium carbonate.

Preparation for Homœopathic Use.—Pure sulphate of magnesium is triturated, as directed under Class VII.

MAGNESIA USTA.

Synonyms, *Magnesia Calcinata*. Calcined Magnesia.

Common Name, *Magnesia*.

Formula, Mg O .

Molecular Weight, 40.

Preparation of Calcined Magnesia.—Take of carbonate of magnesium a convenient quantity. Put it into an earthen vessel, and expose it to a red heat for two hours, or until the carbonic acid is entirely expelled, rubbing it constantly with an iron spoon during calcination.

Properties.—Magnesia is a white powder, without odor, and of an earthy, but destitute of saline taste. Exposed to a high heat, it becomes more compact, but does not fuse except before the oxyhydrogen blow-pipe. According to Fresenius, it requires about 55,000 parts of water for solution; but the liquid has a distinct alkaline reaction. Its specific gravity varies between 2.3 and 3.3. When mixed with water it unites with it, forming a hydrate, having the composition Mg 2 HO , and, when heated, losing thirty-one per cent. of its weight. Exposed to the atmosphere a similar change takes place, but carbonic acid is also absorbed, and a corresponding quantity of oxycarbonate is formed. It should, therefore, be preserved in well-stoppered bottles.

Tests.—The degree of hydration allowable is not given by the pharmacopœias; but when well kept, the loss by heating to redness should not exceed five or six per cent. It should dissolve in dilute acids without any or with but very slight effervescence. When treated with dilute nitric acid it should dissolve without leaving any residue, and the solution should yield no precipitates with barium nitrate (*sulphates*) or silver nitrate (*chlorides*), and potassium ferrocyanide should impart only a bluish tint, but not a deep blue precipitate (*iron*). On adding ammonium chloride and an excess of ammonia, the solution remains clear on the further addition of ammonium oxalate (absence of *calcium*), and on the addition of sulphhydrate of ammonium (*zinc*, etc.); but yields with phosphate of sodium a white precipitate of ammonio-magnesium phosphate.

Preparation for Homœopathic Use.—Pure calcined magnesia is triturated as directed under Class VII.

MAGNOLIA.

Synonym, Magnolia Glauca, *Linn.*

Nat. Ord., Magnoliaceæ.

Common Names, Laurel Magnolia. White Laurel.

Magnolia glauca, sometimes called *sweet bay*, *white bay*, *beaver tree*, or *swamp sassafras*, is indigenous to swampy localities near the coast of the United States from Massachusetts to Louisiana; in the northern part of the country it is shrubby; further south it is a small tree fifteen to twenty-five feet high. It has oval oblong leaves which are shining above and white beneath, and bears fragrant white flowers about two inches in diameter, with about ten ovate or obovate obtuse petals. The leaves may be used for marking by placing the white surface upon the fabric and writing with some pressure upon the upper surface. The flowers appear in May and June; they have a white or greenish calyx of three sepals, many stamens with short filaments, and many ovaries collected on an elongated receptacle, forming a cone-like aggregation of fruits which open at maturity, the berry-like seeds being suspended by a thread-like funiculus.

Preparation.—The fresh flowers are chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, and poured it into a well-stoppered bottle, it is allowed to stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Amount of drug power, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

MAJORANA.

Synonyms, Origanum Majorana, *Linn.* Majorana Hortensis, *Mench.*

Nat. Ord., Labiatae.

Common Name, Sweet Marjoram.

This is an annual herb, frequently cultivated for culinary purposes, and is indigenous to Western Asia and southeastern Europe. The leaves are spatulate or oval, very obtuse, entire, gray-green, soft, hairy, and pellucid-punctate. The flowers are aggregated in small heads, and have a small whitish corolla. The plant is agreeably and pungently aromatic.

Preparation.—The fresh plant, in flower, is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well and poured it into a well-stoppered bottle, it is allowed to stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Amount of drug power, $\frac{1}{4}$.

Dilutions must be prepared as directed under Class III.

MANCINELLA.

Synonym, Hippomane Mancinella, *Linn.*

Nat. Ord., Euphorbiaceæ.

Common Name, Manchineel.

Although the poisonous properties of the mancinella have been very much exaggerated, it is nevertheless a very poisonous tree, which is becoming more and more rare, owing to its being rooted up with great care wherever it shows itself. It is a native of the West Indies, from twelve to fifteen feet high, with a trunk having a white and soft wood and covered with a grayish bark. Its leaves are alternate, oval-acute, somewhat cordate at their base, with fine indentations, and a red gland at their apex. They are attached to long petioles; stipulate while young. Flowers monœcious, forming long terminal spikes, the male flowers being above, the female below or at the axilla of the leaves. The male flowers have a bifid perianth whence emanate the stamens, the united filaments of which form a column that supports the anthers. The female flowers have a perianth with two or three divisions and a rudimentary foliole; the ovary is round and superior; style straight, terminating in six or seven red, radiating, reflexed stigmata. The fruit is round, pulpy, from five to six inches in diameter, umbilicate at the top, and enclosing a wooden kernel with seven monosperm compartments.

Preparation.—Equal parts of the fresh leaves, bark, and fruit are chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well and poured it into a well-stoppered bottle, it is allowed to stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Amount of drug power, $\frac{1}{4}$.

Dilutions must be prepared as directed under Class III.

MANGANUM ACETICUM.

Synonyms, Acetas Manganosus. Manganesii Acetas. Manganous Acetate.

Common Name, Acetate of Manganese.

Preparation of Manganium.—Freshly precipitated carbonate of manganese is dissolved until it is neutralized in hot concentrated vinegar, the solution filtered off from the manganese in excess, and slowly evaporated to the point of crystallization.

Properties.—The salt crystallizes in colorless or pale reddish shining, rhomboidic columns, is persistent in the air, and easily dissolvable in water.

Preparation for Homœopathic Use.—Acetate of manganese is triturated as directed under Class VII.

MANGANUM CARBONICUM.

Synonyms, Carbonas Manganosus. Mangesii Carbonas. Manganous Carbonate.

Common Name, Carbonate of Manganese.

Preparation of Carbonate of Manganium.—It is prepared by precipitating in the presence of a little syrup a solution of manganous sulphate with carbonate of sodium, washing the precipitate well and drying it rapidly with a moderate heat.

Properties.—It is a white powder, having a brownish tinge, and dissolving in carbonic acid water, leaving only a slight residue of brown manganic oxide.

Preparation for Homœopathic Use.—Carbonate of manganese is triturated, as directed under Class VII.

MANGANUM METALLICUM.

Synonym, Metallic Manganese.

Symbol, Mn.

Molecular Weight, 27.7.

Preparation and Properties of Metallic Manganese.—It was discovered by Scheele and Gahn in 1774, and is obtained from the native black oxide by intense ignition with charcoal. As obtained by C. Brunner, decomposing the fluoride by sodium, manganese is brittle, grayish-white and very hard, being capable of cutting glass, and scratching the best tempered steel.* It is susceptible of the most perfect polish, and is not altered, even in moist air, at the ordinary temperature. Its specific gravity varies from 7.1 to 7.2. Deville suspects that Brunner's manganese contains a little carbon. This chemist obtained the metal by heating the black oxide in excess with charcoal, in a lime crucible. The metal thus obtained, is more refractory than iron; while that procured by Brunner fused at the same heat as white cast iron. With oxygen it forms five compounds, three regular oxides and two acids.

Preparation for Homœopathic Use.—Metallic manganese is triturated, as directed under Class VII.

MATICO.

Synonyms, Artanthe Elongata, *Miguel*. Piper Angustifolium, *Ruiz et Pavon*. Steffensia Elongata, *Kunth*.

Nat. Ord., Piperaceæ.

Common Names, Soldier's Herb. Narrow-leaved Piper.

This is a shrub with a jointed stem about twelve feet in height. The leaves are sessile or very shortly petiolate, oval-lanceolate, acuminate, two or three inches long by about an inch in breadth, bright green on the upper surface, paler and downy beneath, crenate, minutely and strongly reticulated, of an agreeable aromatic odor, and a strong, spicy taste. The spikes are solitary, opposite the leaves, and cylindrical. The bracts are peltate or cucullate; the flowers hermaphrodite. The plant is a native of Peru.

Preparation.—The dried leaves are finely powdered and covered with five parts by weight of alcohol; having been poured into a well-stoppered bottle, it is allowed to remain eight days in a dark, cool place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{10}$.

Dilutions must be prepared as directed under Class IV.

MELASTOMA ACKERMANNI.

Synonym, *Melastoma Tapixirica.*

Nat. Ord. , Melastomaceæ.

Common Name, Tapixirica.

This is a bush with round branches, triangular at their extremities, and covered with a brownish bark. The leaves are opposite, supported by short and hairy petioles; their limb is oval, reticulate, covered with stiff hairs, and traversed on its lower surface by five thick almost parallel nerves, running from the base to the summit of the leaf. The flowers are sessile supported by terminal axis. This bush is a native of tropical America.

Preparation.—The fresh leaves are chopped to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, and poured it into a well-stoppered bottle, it is allowed to stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{4}$.

Dilutions must be prepared as directed under Class III.

MELILOTUS.

Synonym, *Melilotus Alba, Lamarck.*

Nat. Ord., Leguminosæ.

Common Names, White Melilot. Sweet Clover.

This plant is a native of Europe, where it grows along roadsides and in cultivated ground, and has been, to some extent, naturalized in North America. It is about three feet high, smooth, and has entire awl-shaped stipules and trifoliate leaves, the lower leaflets truncate and the upper ones lanceolate. The flowers are in erect racemes, white in color, and very fragrant.

Preparation.—The fresh flowers are pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, and poured it into a well-stoppered bottle, it is allowed to stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Amount of drug power, $\frac{1}{4}$.

Dilutions must be prepared as directed under Class III.

MELILOTUS OFFICINALIS, Willd.**Synonym,** *Trifolium Officinale*.**Nat. Ord.,** Leguminosæ.**Common Names,** Yellow Melilot. Sweet Clover.

This plant is a native of Europe, and naturalized in North America, growing in similar places to *Melilotus Alba*. It is upright, two to four feet high, and has trifoliate leaves; leaflets obovate-oblong, obtuse. Corolla yellow; the petals nearly of equal length. Flowers very fragrant.

Preparation.—The fresh flowers are pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, and poured it into a well-stoppered bottle, allow it to stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Amount of drug power, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

MELOË MAJALIS.**Synonym,** *Meloë Proscarabæus*.**Class,** Insecta.**Order,** Coleoptera.**Family,** Vesicantia.

Common Name, Oil-Beetle. (This must not be confounded with the common May-beetle [*Scarabæus Melolantha*].)

The *meloë proscarabæus* is without wings, an inch or an inch and a half long, and about as big as a finger. It is soft, with the head bent downwards as that of the cantharis, antennæ moniliform, of twelve joints, corslet almost rounded and flexible, punctuated elytræ which cover scarcely one-half of the oval abdomen. The color of the head, feet and abdomen, verges on the reddish. The fore feet have five, the hind feet four joints.

The *meloë majalis* is the smaller of the two; its body is coppery-red, or bronze-black; the elytræ are black-green, and the black is furnished with red incisions.

The two kinds have a disagreeable odor, and emit, when seized, an acrid, yellowish humour, staining the fingers, and smelling something like the violet, of a sweetish taste at first, then acrid and caustic, and causing an itching and blister-like eruption on the skin.

These insects are found all over Europe in the spring, on the grass, low plants, on dry meadows and sunny hills. They have to be gathered with great care, so that the juice which they emit should not get lost, and they should at once be placed in the vessel in which they are to be kept.

Preparation.—The living insect carefully put into the glass used for the pharmaceutical preparation, so as not to lose any of the juice, is drenched with five parts by weight of alcohol, and macerated eight

days, being shaken twice a day. The tincture is then poured off, strained and filtered.

Amount of drug power, $\frac{1}{16}$.

Dilutions must be prepared as directed under Class IV.

MENISPERMUM CANADENSE, Linn.

Synonym, *Cissampelos Smilacina*.

Nat. Ord., Menispermaceæ.

Common Names, Yellow Parilla. Canadian Moonseed. Vine Maple.

This is a climbing plant, growing in various parts of the United States, on banks of streams, from the northern boundary to the Gulf of Mexico. The root or rhizome is long, of a yellow color, and a bitter taste. Leaves peltate near the edge, three to seven angled or lobed. Flowers whitish or greenish-yellow, in axillary panicles appearing in June and July. Sepals four to eight. Petals six to eight, short. Stamens twelve to twenty in the sterile flowers, as long as the sepals; anthers four-celled. Pistils two to four in the fertile flowers, raised on a short common receptacle; stigma broad and flat. Drupe globular, the mark of the stigma near the base, the ovary in its growth after flowering being strongly incurved, so that the (wrinkled and grooved) laterally flattened stone (putamen) takes the form of a large crescent or a ring. Drupes ripen in September, looking like frost grapes.

Preparation.—The fresh root is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, and poured it into a well-stoppered bottle, it is allowed to stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

MENTHA PIPERITA, Linn.

Synonyms, *Mentha Hercina*. *Mentha Viridi Aquatica*.

Nat. Ord., Labiatae.

Common Name, Peppermint.

Peppermint is found wild in wet places in England, in other countries in Europe and in North America; it is also largely cultivated. It is a perennial plant, readily multiplying by runners, and with a square, frequently purplish stem, about three feet high. The leaves are two to three inches long, and all petiolate, the petioles being about half an inch long; they vary in shape between lanceolate and ovate-lanceolate, have a rounded base, an acute apex and a sharply serrate margin; the upper surface is dark green and smooth, the lower surface paler, with numerous glands, and upon the nerves sparingly pubescent. The inflorescence is terminal, consists of twelve to sixteen whorls, the lowest of which are somewhat distant; it is conical in shape,

rounded or acute above, and two inches long; the cymules of each whorl contain about twenty or thirty flowers. The calyx is often purplish, tubular, five-toothed, ten-ribbed, glabrous, but dotted with yellowish glands. The corolla is pale purplish-red and smooth, with the tube about as long as the calyx, and the limb nearly equally four-lobed. The four short stamens are equal in length, and included in the calyx tube. The fruit consists of four brownish, smooth or rugose akenes. It flowers in August and September.

Preparation.—The fresh plant, in flower, is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, and having poured it into a well-stoppered bottle, it is allowed to stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Amount of drug power, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

MENYANTHES.

Synonyms, *Menyanthes Trifoliata*, *Linn.* *Trifolium Amarum*.

Nat. Ord., Gentianaceæ.

Common Names, Buckbean. Marsh Trefoil. Water Shamrock.

This is a perennial, indigenous to North America from Pennsylvania northward, to Europe and Northern Asia. It grows in boggy places, has a fleshy rhizome of the thickness of a finger, and sheathed by the remnants of the leaf-stalks, and bears a naked scape with about fifteen rose-colored or whitish flowers. It blooms in May and June. The leaves are on petioles four or six inches long, ternate, the leaflets sessile, about two inches long, obtuse, oblong or obovate, the margin slightly crenate, smooth and pale green. They are inodorous, and have a very bitter taste free from astringency.

Preparation.—The fresh plant, just coming into bloom, is chopped and pounded to pulp, and pressed out *lege artis* in a piece of new linen. The expressed juice is then, by brisk agitation, mingled with an equal part by weight of alcohol. This mixture is allowed to stand eight days in a well-stoppered bottle in a dark, cool place, and then filtered.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class I.

MEPHITIS.

Synonyms, *Mephitis Putorius*. *Viverra Putorius*.

Class, Mammalia.

Order, Carnivora.

Family, Mustelina.

Common Names, Skunk. Polecat.

The polecat is a quadruped of the family of martins, inhabiting the United States; it is of the size of a martin, with round head; snout

elongated, three-rowed moustaches on the upper jaw, a dry nose, and the neck a little marked. Its coat is black, but it has a white streak along the back to the tail, and two others on each side parallel to the first; the posterior part of its body is larger than that of the martin; its tail is as if cropped, and furnished with long hairs, and nearly all white; the under part of the body is whitish; the fore part of the feet elongated and fortified with five strong nails; near to the anus there is, as in all the genus *viverra*, a pouch where follicular glands deposit an unctuous matter of such an infectious and insupportable odor, that at the approach of the animal, at the moment when he squirts his liquor, the respiration is stifled and asphyxia seems near at hand. This liquor is nearly puriform, of a deep yellow color, and of an alliaceous smell.

Preparation.—One part by weight of the liquid obtained from the anal glands of the animal is dissolved in fifty parts by weight of alcohol.

Amount of drug power, $\frac{1}{100}$.

Dilutions must be prepared as directed under Class VI.— β .

MERCURIALIS PERENNIS, *Linn.*

Synonyms, *Cynocrambes*. *Mercurialis Montane*.

Nat. Ord., *Euphorbiacæ*.

Common Name, Dog Mercury.

This plant is indigenous to Europe, where it occurs in shaded, mountainous forests, on stony or moist ground. It is distinguished from *mercurialis annua* (to which it is nearly related, and occurring more frequently) by its creeping, knotty, articulate root, which is verticillately fibred on the joints; by its single, low, below leafless stem and the short-petiolate, serrated, and short-haired, elliptic-lanceolate leaves. Flowers appear in early spring.

Preparation.—The fresh plant, in flower, is chopped and pounded to a pulp and weighed. Then two-thirds the quantity by weight of alcohol is taken, and having mixed it thoroughly with the pulp, it is pressed out *lege artis* in a piece of new linen, and filtered.

Amount of drug power, $\frac{1}{4}$.

Dilutions must be prepared as directed under Class II.

MERCURIUS ACETICUS.

Synonyms, *Hydrargyrum Aceticum*. *Mercurius Acetate*.

Common Name, Acetate of Mercury.

Preparation of Acetate of Mercury.—A solution of the nitrate of mercury, as is mentioned under the head *Mercurius solubilis*, is prepared and decomposed by pure carbonate of soda, dissolved in twice its quantity of distilled water. The carbonate of mercury obtained in this way is well washed, heated to boiling in a porcelain dish with eight times its quantity of distilled water, and then gradually so much of concentrated vinegar added, till all is dissolved. The hot filtered liquid yields after refrigeration scale-like, crystalline laminae, shining

like mother-of-pearl, and very greasy to the touch; they are removed from the mother-liquor, speedily washed with diluted spirit of wine, and, after being dried between bibulous paper, preserved well protected from light.

Preparation for Homœopathic Use.—Pure acetate of mercury is triturated as directed under Class VII.

MERCURIUS AURATUS.

Preparation of Mercurius Auratus.—One part of gold and two parts of mercury are well mixed together by shaking in a glass vessel, and then the mixture is poured into a crucible coated inside with chalk, and made half red-hot. The crucible is then gently agitated for some seconds, and the contents poured into a porcelain vessel filled with cold water; it is afterwards collected and carefully dried.

Preparation for Homœopathic Use.—Mercurius auratus, as prepared above, is triturated as directed under Class VII.

MERCURIUS CYANATUS.

Synonyms, Hydrargyri Cyanidum. Cyanuretum Hydrargyricum. Mercuric Cyanide.

Common Names, Cyanide of Mercury. Cyanuret of Mercury.

Formula, Hg Cy_2 or $\text{Hg}(\text{CN})_2$.

Molecular Weight, 252.

Preparation of Cyanide of Mercury.—Take of ferrocyanide of potassium, five troy ounces; sulphuric acid, four troy ounces and one hundred and twenty grains; red oxide of mercury in fine powder, water, each a sufficient quantity. Dissolve the ferrocyanide of potassium in twenty fluidounces of water, and add the solution to the sulphuric acid, previously diluted with ten fluidounces of water, and contained in a glass retort. Distil the mixture nearly to dryness into a receiver, containing ten fluidounces of water and three troy ounces of red oxide of mercury. Set aside two fluidounces of the distilled liquid, and to the remainder add, with agitation, sufficient red oxide to destroy the odor of hydrocyanic acid. Then filter the solution, and, having added the reserved liquid, evaporate the whole in a dark place, in order that crystals may form. Lastly, dry the crystals, and keep them in a well-stoppered bottle, protected from the light.

Properties.—Mercuric cyanide is in colorless or white quadrangular prisms, which are soluble in eight parts of water and about twenty parts of alcohol, but quite sparingly soluble in absolute alcohol. The aqueous solution is not decomposed by nitric or dilute sulphuric acid, but hydrochloric acid liberates hydrocyanic acid, recognizable by its odor, and mercuric chloride remains in solution. The aqueous solution is not precipitated by alkalis or nitrate of silver; but yields a black precipitate with sulphuretted hydrogen. The salt has a bitter metallic taste, is blackened by exposure to the light, and when carefully heated is decomposed into mercury and cyanogen, which is inflammable, burning with a purplish flame. When rapidly heated, black paracyanogen

remains behind, and in the presence of moisture carbonic acid and ammonia are evolved besides hydrocyanic acid.

Tests.—Mercuric oxycyanide, if present, is sparingly soluble in cold water, and the solution imparts a brown color to turmeric paper.

Preparation for Homœopathic Use.—One part by weight of pure cyanide of mercury is dissolved in ninety-nine parts by weight of distilled water.

Amount of drug power, $\frac{1}{100}$.

Dilutions must be prepared as directed under Class V— β .

Triturations of pure cyanide of mercury are prepared as directed under Class VII.

MERCURIUS DULCIS.

Synonyms, Hydrargyri Chloridum Mite. Hydrargyri Subchloridum. Hydrargyrum Chloratum Mite. Calomelas. Mild Chloride of Mercury. Subchloride of Mercury. Submuriate of Mercury.

Common Name, Calomel.

Formula, $\text{Hg}_2 \text{Cl}_2$ (or Hg Cl).

Molecular Weight, 471 (or 235.5).

Preparation of Calomel.—Take of mercury, forty-eight troy ounces; sulphuric acid, thirty-six troy ounces; chloride of sodium, eighteen troy ounces; distilled water, a sufficient quantity. Boil, by means of a sand-bath, twenty-four troy ounces of the mercury with the sulphuric acid until a dry, white mass is left. Rub this, when cold, with the remainder of the mercury, in an earthenware mortar, until they are thoroughly mixed. Then add the chloride of sodium, and, having rubbed it with the other ingredients until globules of mercury cease to be visible, sublime the mixture into a large chamber so that the sublimate may fall in powder. Wash the sublimed matter with boiling distilled water until the washings afford no precipitate with water of ammonia, and dry it.

Properties.—Calomel is a heavy, fine and smooth white powder, which, under the microscope, is observed to consist of minute needle-shaped crystals; but when prepared by levigating the crystallized mass, it forms irregular fragments of crystals. Its density is about 7.0, but varies somewhat as prepared by different processes. When heated it sublimes completely without previous fusion. It is insoluble in water and other simple solvents; but boiled in water it is slowly decomposed into metallic mercury and mercuric chloride. When triturated with impure sugar, some corrosive sublimate is formed.

Tests.—Calomel should volatilize, when heated, without leaving any residue (absence of fixed impurities). Heated with potassa solution it should turn black without evolving the odor of ammonia (absence of ammonium compounds). Agitated with warm water or alcohol, the filtrate should not be colored by sulphuretted hydrogen, nor yield a white precipitate with silver nitrate (absence of mercuric chloride). Agitated with diluted acetic acid, the filtrate should not be affected by sulphuretted hydrogen or silver nitrate (absence of ammoniated mercury).

Preparation for Homœopathic Use.—Pure calomel is triturated as directed under Class VII.

MERCURIUS IODATUS FLAVUS.

Synonyms, Hydrargyrum Iodatum. Hydrargyrum Iodidum. Hydrargyrum Iodatum Flavum. Hydrargyri Iodidum Viride. Yellow Iodide of Mercury. Green Iodide of Mercury. Mercurous Iodide. Protoiodide of Mercury.

Common Name, Yellow Iodide of Mercury.

Formula, $\text{Hg}_2 \text{I}_2$ (or Hg I).

Molecular Weight, 654 (or 327).

Preparation of Yellow Iodide of Mercury.—Take of mercury, a troy ounce; iodine, three hundred grains; stronger alcohol, a sufficient quantity. Mix the mercury and iodine in a mortar, and, having added half a fluidounce of stronger alcohol, triturate all together until the ingredients are thoroughly incorporated. Stir the mixture occasionally, and, at the end of two hours, triturate again, with considerable pressure, until it is nearly dry. Then rub it up with stronger alcohol, gradually added, until it is reduced to a uniform, thin paste; and, having transferred this to a filter, wash it with stronger alcohol until the washings cease to produce a permanent cloudiness when dropped into a large quantity of water. Lastly, dry the iodide in the dark with a gentle heat, and keep it in a well-stoppered bottle, protected from the light.

Properties and Tests.—Mercurous iodide which has not been washed with alcohol is dark green; but having been freed from the red iodide by either hot or cold alcohol it is greenish-yellow. On exposure to the light red iodide is formed, it turns dark green and finally black, the decomposition being accelerated by moisture. When heated it turns red-brown, and finally sublimes, yielding mercury and red crystals of mercurous-mercuric iodide, $\text{Hg}_2 \text{I}_2 \cdot 2\text{Hg I}_2$, which become yellow on cooling. Mercurous iodide is almost insoluble in water and entirely insoluble in alcohol and ether; when treated with alcohol, the filtrate on being dropped into water should produce only a very faint cloudiness, and on evaporation should leave only a minute trace of red iodide. Fixed impurities, if present, remain behind if a portion is heated to redness in a porcelain crucible.

Preparation for Homœopathic Use.—Pure yellow iodide of mercury is triturated as directed under Class VII, care being taken to protect from light.

MERCURIUS IODATUS RUBER.

Synonym, Hydrargyrum Biiodatum Rubrum. Hydrargyri Iodidum Rubrum. Deutoioduretum (Biniodidum) Hydrargyri. Biniodide of Mercury.

Common Name, Red Iodide of Mercury.

Formula, Hg I_2 .

Molecular Weight, 454.

Preparation of Red Iodide of Mercury.—Take of corrosive

chloride of mercury, a troy ounce; iodide of potassium, a troy ounce and one hundred and twenty grains; distilled water, a sufficient quantity. Dissolve the corrosive chloride of mercury in a pint and a half, and the iodide of potassium in half a pint of distilled water, and mix the solution. Collect the precipitate upon a filter, and, having washed it with distilled water, dry it with a gentle heat, and keep it in a well-stoppered bottle.

Properties.—Mercuric iodide is a scarlet-red powder, or is in brilliant crystals; on being heated it turns yellow, fuses near 240° C. (464° F.) to an amber-colored liquid, and sublimes to bright yellow tabular crystals, which, after cooling, are again converted into the prismatic or octahedral red crystals. The salt is very sparingly soluble in cold or hot water, little so in ether, and freely in hot alcohol, from which it crystallizes on cooling. The solutions are colorless, and are partly decomposed by potassa solution, a portion of the mercury being deposited as mercuric oxide, the remainder forming a soluble iodide of potassium and mercury. When a hot solution of potassium iodide is saturated with mercuric iodide and then allowed to cool, one-third of the latter salt crystallizes on cooling; the remainder is obtained, on further concentration, as yellow prisms, which are soluble in alcohol and ether, but are partly decomposed by water. The crystals are *mercuric potassium iodide*, $2(\text{KI. Hg I}_2) \cdot 3\text{H}_2\text{O}$, more generally known as *iodohydrargyrate of potassium*, and are likewise formed on adding mercuric chloride to an excess of potassium iodide.

Impurities, if present, are readily detected by the residue left on subliming the salt (red oxide of lead and other non-volatile compounds), and on dissolving it in hot alcohol (vermillion, etc.).

Preparation for Homœopathic Use.—Pure red iodide of mercury is triturated as directed under Class VII.

MERCURIUS NITROSUS.

Synonyms, Hydrargyrum Nitricum Oxydulatum. Protonitrate of Mercury.

Common Name, Nitrate of Mercury.

Preparation of Nitrate of Mercury.—To twenty parts of pure mercury add, in a very flat porcelain dish, a mixture of nine parts of concentrated nitric acid, of 1.2 specific gravity, and twenty-seven parts of distilled water; cover it lightly, and let it stand in a dark, cool place until the formation of the white octahedral crystals, the salt required, has ceased. From time to time they are taken off the mercury upon whose surface they are floating, after which we wash them speedily with a little alcohol and then dry them between layers of bibulous paper; this done, they are preserved in a well-stoppered bottle. The crystals are persisting in the air, and perfectly soluble in water that has been slightly acidulated with a few drops of nitric acid.

Preparation for Homœopathic Use—Pure nitrate of mercury is triturated as directed under Class VII.

MERCURIUS PRÆCIPITATUS ALBUS.

Synonyms, Hydrargyrum Ammoniatum. Hydrargyri Ammonio-Chloridum. Hydrargyrum Præcipitatum Album.

Common Names, Ammoniated Mercury. White Precipitate.

Formula, $\text{NH}_4 \text{Hg Cl}$.

Molecular Weight, 251.5.

Preparation of White Precipitate.—Take of corrosive chloride of mercury, six troy ounces; water of ammonia, eight fluid ounces; distilled water, eight pints. Dissolve the corrosive chloride of mercury in the distilled water, with the aid of heat, and to the solution, when cold, add the water of ammonia, frequently stirring. Wash the precipitate with water until the washings become nearly tasteless, and dry it.

Properties and Tests.—Ammoniated mercury is a white powder, or is often in friable masses, having an earthy, afterwards metallic taste. It is insoluble in ether, alcohol, and water, but yields with boiling water a lemon-yellow basic compound, ammonium chloride being dissolved. When heated, it volatilizes without fusion and without leaving any residue (absence of non-volatile compounds). Potassa solution or lime-water evolves ammonia and colors the powder yellow; it is soluble in hot solutions of ammonium salts and in hydrochloric, as well as in nitric and acetic acids, without effervescence (absence of carbonates). The solutions yield white precipitates with potassa (ammoniated mercury) and silver nitrate (silver chloride). The solution in acetic acid yields no precipitate with sulphuric acid (absence of lead). When treated with an excess of hydrogen sulphide, a black precipitate is obtained, and a colorless filtrate, which, on being acidulated with hydrochloric acid, evaporate to dryness, and ignited, is not charred (absence of starch), and leaves no fixed residue (absence of zinc, calcium, etc., salts). When ammoniated mercury is triturated with iodine, the mixture will after some time puff up, from the spontaneous decomposition of iodide of nitrogen or iodamine formed in it; but in the presence of alcohol the decomposition takes place suddenly and with violent explosion.

Preparation for Homœopathic Use.—Pure ammoniated mercury is triturated as directed under Class VII.

MERCURIUS PRÆCIPITATUS RUBER.

Synonyms, Hydrargyrum Oxydatum Rubrum. Hydrargyri Oxidum Rubrum. Hydrargyri Nitrico-Oxidum. Oxydum Hydrargyricum. Red Oxide of Mercury. Peroxide of Mercury. Mercuric Oxide.

Common Name, Red Precipitate.

Formula, HgO .

Molecular Weight, 216.

Preparation of Red Oxide of Mercury.—Take of mercury, thirty-six troy ounces; nitric acid, twenty-four troy ounces; water, two pints. Dissolve the mercury, with the aid of a gentle heat, in the acid and water previously mixed, and evaporate to dryness. Rub the dry

mass into powder, and heat it in a shallow vessel until red vapors cease to rise.

Properties and Tests.—When made on a small scale, it is a finely granular powder of a yellowish-red color, without lustre, but, made in larger quantities, it is obtained in the form of bright brownish-red shining crystalline scales, which on trituration yield a fine orange-red powder. By exposure to the light it becomes superficially black, but much more slowly than the yellow oxide. When heated, its color is changed to dark red, brown, and black, the original color reappearing on cooling; but when heated to a little beyond the boiling point of mercury, it is decomposed into metal and oxygen. When thus treated, red nitrous vapors should not be given off (absence of nitrate), and no residue should be left (absence of non-volatile impurities). It dissolves completely in nitric acid; a red-colored residue would indicate the presence of brick-dust or of vermilion, the latter being volatilizable by heat; a brown residue (of puce-colored oxide of lead) would prove an adulteration with red lead, and the nitric acid solution would contain lead recognizable by the white precipitate appearing on the addition of a little sulphuric acid.

Preparation for Homœopathic Use.—Pure red oxide of mercury is triturated as directed under Class VII.

MERCURIUS SOLUBILIS HAHNEMANNI.

Synonyms, Hydrargyrum Oxydulatum Nigrum. Hydrargyrum Oxydulatum Nitricum Ammoniatum. Black Oxide of Mercury. Protoxide of Mercury. Ammonio-Nitrate of Suboxide or Dioxide of Mercury.

Origin of Mercurius Sol. H.—This mercurial preparation is neither an *oxide* nor a *protoxide* of mercury, but an *ammoniaco-mercurial subproto* nitrate, which, as it does not keep well, and is very likely to pass to the maximum of oxidation, should be prepared in a very small quantity at a time. Hahnemann himself abandoned this preparation, preferring to it, *in all cases*, that of metallic mercury, mentioned as *Mercurius vivus*. Nevertheless, as there are many who believe that metallic mercury is not so efficacious as the uncertain preparation, *black oxide of mercury*, we give the method recommended by Hahnemann to obtain it.

Preparation of Mercurius Solubilis Hahnemanni.—Having purified the mercury, as described under *mercurius vivus*, it is dissolved, cold, in strong nitric acid, which requires many days; the salt which results is dried on blotting-paper, and triturated in a glass mortar for half an hour, adding one-fourth of its weight of the best alcohol. The alcohol which has been converted into ether is thrown aside, and the trituration of the mercurial is continued with fresh alcohol for half an hour each time, until this fluid no longer has the smell of ether. That being done, the alcohol is decanted and the salt dried on blotting-paper, which is renewed from time to time. Afterwards it is triturated for a quarter of an hour, in a glass mortar, with twice its weight of distilled water; the clear fluid is decanted, the salt is again washed by

a second trituration with a fresh quantity of water, the clear fluid is united to the preceding, and thus we have the aqueous solution of all that the saline mass contained of mercurial nitrate really saturated. The residuum is composed of other mercurial salts, of chloride and sulphate. Finally, this aqueous solution precipitates, by caustic ammonia, the so-called *black oxide of mercury*.

Preparation for Homœopathic Use.—*Mercurius solubilis Hahnemanni*, prepared according to above formula, is triturated as directed under Class VII.

MERCURIUS SUBLIMATUS CORROSIVUS.

Synonyms, Hydrargyri Chloridum Corrosivum. Hydrargyri Perchloridum. Hydrargyrum Bichloratum Corrosivum. Corrosive Chloride of Mercury. Perchloride of Mercury. Bichloride of Mercury.

Common Name, Corrosive Sublimate.

Formula, Hg Cl_2 .

Molecular Weight, 271.

Preparation of Bichloride of Mercury.—Take of mercury, twenty-four troy ounces; sulphuric acid, thirty-six troy ounces; chloride of sodium, eighteen troy ounces. Boil the mercury with the sulphuric acid, by means of a sand-bath, until a dry, white mass is left. Rub this, when cold, with the chloride of sodium in an earthenware mortar; then sublime with a gradually increasing heat.

Properties.—Corrosive sublimate forms colorless prismatic crystals, or, more generally, heavy white crystalline masses. It has the density 5.4 and, when heated, fuses and sublimes without leaving any residue. It has a disagreeable metallic taste, and dissolves in about two parts of boiling water and sixteen parts of water at the common temperature (Poggiale), also in three parts of alcohol and four parts of ether. When exposed to the light, its aqueous solution is decomposed with the precipitation of calomel and the liberation of hydrochloric acid; the decomposition is prevented by the presence of free hydrochloric acid or of ammonium chloride. The aqueous solution yields yellow precipitates of mercuric oxide with lime-water, or potassa solution, a white precipitate of ammoniated mercury with ammonia, and a white curdy one of silver chloride on the addition of nitrate of silver. Phosphorous and sulphurous acids separate calomel from the solutions; hypophosphorous acid and stannous chloride produce the same change, but when in excess and heated, liberate metallic mercury. The salt is soluble without decomposition in sulphuric, hydrochloric or nitric acid, and crystallizes again on cooling.

Tests.—Corrosive sublimate should volatilize when heated without leaving any residue (absence of fixed impurities), and should be completely soluble in water or alcohol (absence of calomel). It often contains traces of arsenic, which are probably derived from the sulphuric acid with which the sulphate was prepared; this may be readily detected by mixing the solution with an excess of potassa solution, adding some zinc and heating, the test-tube being covered with filtering paper moistened with a drop of solution of silver nitrate; the appear-

ance of a black spot indicates arsenic. J. G. Smith (1877) found in some samples $\frac{1}{10}$ per cent. of the impurity.

Preparation for Homœopathic Use.—One part by weight of pure corrosive sublimate is dissolved in fifty parts by weight of alcohol.

Amount of drug power, $\frac{1}{100}$.

Dilutions must be prepared as directed under Class VI— β .

Triturations are prepared, as directed under Class VII.

The alcoholic solution is to be preferred on account of its stability.

MERCURIUS SULPHURETUM NIGRUM.

Synonyms, Black Sulphuret of Mercury. *Æthiops Mineralis*. *Hydrargyrum Sulphuretum Nigrum*.

A mixture of black amorphous sulphide of mercury, Hg S , with a large excess of sulphur.

Preparation of *Æthiops Mineralis*.—Take mercury and sulphur of each one pound. Rub them together till all the globules disappear.

Mercury and sulphur have a strong affinity for each other, as is shown by the fact, that, when they are triturated together in quantities, the mixture grows hot, cakes, and exhales a sulphurous odor. During the trituration, the mixture should be sprinkled from time to time with a little water or alcohol, to prevent the dust from rising, which exposes the operator to serious inconvenience.

Properties.—*Æthiops Mineralis* is a heavy, tasteless, insoluble, fine black powder, which, when viewed with a lens, does not show any globules of uncombined mercury.

Tests.—When heated upon a plate, it takes fire and burns with a blue flame, without leaving any residue; heated in a test-tube, it yields a red sublimate of vermilion. When digested with hydrochloric acid, the acid liquid does not yield a white precipitate on being diluted with water (absence of antimony). Ivory black is detected in it by throwing a small portion on red hot iron, when a white matter (phosphate of calcium) will be left behind.

Preparation for Homœopathic Use.—The pure black sulphuret of mercury is triturated as directed under Class VII.

MERCURIUS SULPHURICUS.

Synonyms, *Hydrargyri Sulphas*. *Hydrargyrum Sulphuricum*. *Mercuric Sulphate*.

Common Names, Sulphate of Mercury. Persulphate of Mercury.

Formula, Hg SO_4 .

Molecular Weight, 296.

Preparation of Sulphate of Mercury.—Take of mercury by weight, twenty ounces; sulphuric acid, twelve fluid ounces. Heat the mercury with the sulphuric acid in a porcelain vessel, stirring constantly until the metal disappears, then continue the heat until a dry white salt remains. Mercury does not dissolve in cold sulphuric acid; but on heating the mixture sulphurous acid and watery vapors are

disengaged, any excess of sulphuric acid is driven off, and the residue consists of mercuric sulphate; $\text{Hg}_2 + 4 \text{H}_2 \text{SO}_4$ yields $2 \text{SO}_2 + 4 \text{H}_2 \text{O} + 2 \text{Hg SO}_4$.

Properties and Tests.—Mercuric sulphate is a heavy white crystalline powder which, on being mixed with a small quantity of water, is at first colored yellow, but after some time is converted into colorless shining prisms of the hydrated salt. A larger quantity of water decomposes it permanently into yellow basic sulphate. When heated to redness, it is decomposed and entirely volatilized; any non-volatile residue left would indicate impurities. The salt is partly decomposed by heat, mercurous sulphate and mercury being sublimed, besides undecomposed mercuric sulphate.

Preparation for Homœopathic Use.—Pure sulphate of mercury is triturated as directed under Class VII.

MERCURIUS VIVUS.

Synonyms, Hydrargyrum. Argentum Vivum. Mercury.

Common Name, Quicksilver.

Symbol, Hg.

Atomic Weight, 200.

Origin of Mercury.—Mercury is principally obtained from New Almaden in California, from Peru, China, Idria in Austria, and Almaden in Spain. It is found to some extent in the metallic state in the form of minute or large globules; but the principal ore for extracting it is *cinnabar*.

Preparation of Mercury.—Most of the mercury is obtained by roasting the ore in a kiln. It is placed upon an arch of brick-work containing several openings, through which the flames pass, whereby the sulphur of the ore is ignited and burns, air being admitted at the same time; the heat thus produced volatilizes the mercury, the vapors of which, mingled with the smoke and sulphurous acid gas, are passed through a series of condensing chambers, where the metal is condensed, the incondensable gases finally escaping through the flue. This is essentially the process as carried on at Idria and New Almaden; likewise at Almaden, except that the vapors are passed through the so-called *atudels*, consisting of cylinders adapted to each other, first in a descending and then in an ascending direction, where most of the mercury is condensed and collects in a gutter placed under the angle, the remainder being condensed in a large terminal chamber, from which the gases pass into the flue. In the Palatinate the cinnabar is mixed with lime, and in Bohemia with hammerslag, and then distilled, sulphide of calcium remaining behind in the former, and sulphide of iron in the latter case. Mercury appears in commerce in cylindrical iron flasks containing seventy-five pounds each. In this condition it still contains small quantities of other metals, principally lead. For barometers and thermometers, as well as for pharmaceutical preparations, a purification of the metal is required or advisable, and may be effected by distillation or by the following process:

Hydrargyrum Depuratum.—Take of mercury, one hundred parts; nitric acid, distilled water, each five parts. Introduce them into a suitable vessel, and digest for three days, shaking frequently. Having poured off the acid liquid, wash well the mercury with distilled water, and dry it completely.

The operation is best conducted in a broad glass or porcelain vessel, so as to expose a very large surface of the metal to the action of the dilute acid. The lead, being far more easily oxidized and dissolved than the mercury, is thereby removed, though a little of the latter likewise passes into solution. After washing, most of the water may be removed by bibulous paper.

Properties.—Mercury is solid at a temperature of -39.44° C. (-39° F.), and crystallizes in octohedrons and needles, which are ductile and may be cut with a knife. At the ordinary temperature it forms a bright, silvery liquid, which is very cohering, and not adhering to glass, unless it be impure, when small globules will *tail* or leave a streak upon it. When triturated with sugar, fat, various salts, oil of turpentine, etc., it is converted into a gray powder, consisting of minute globules separated by the foreign substances, and running together again on their removal; this finely divided state is called the *extinction* or *killing* of mercury. Mercury has at 4° C. (39.2° F.) the specific gravity 13.59, and at 15° C. (59° F.) 13.57. It boils at about 350° C. (662° F.), but volatilizes very slowly even at the ordinary temperature. It is permanent at the ordinary temperature, the whitish pellicle which forms upon the surface of commercial mercury being due to the presence of foreign metals (lead, zinc, etc.). It unites directly with chlorine, bromine and iodine, and dissolves even in dilute nitric acid with the evolution of nitric oxide. Boiling hydrochloric and dilute sulphuric acids are without action upon it; but hot concentrated sulphuric acid dissolves the metal, sulphurous acid being driven off. When heated to near its boiling point in contact with the atmosphere, it combines with oxygen, forming scales of red oxide.

Tests.—The purity of mercury is ascertained from its behavior and properties as described above. When some mercury is agitated for a while with the officinal solution of ferric chloride, which is free from ferrous chloride, the liquid should afterwards not yield a blue precipitate on the addition of potassium ferridecyanide, which would result through the solution of a foreign metal and the reduction of some ferric to ferrous chloride; nor should the liquid, if necessary after being acidulated with hydrochloric acid, yield more than a mere trace of a colored precipitate on the addition of hydrogen sulphide.

Preparation for Homœopathic Use.—Pure mercury is triturated, as directed under Class VII.

MEZEREUM.

Synonyms, *Daphne Mezereum*, *Linn.* *Chamædaphne*. *Chamælia Germanica*. *Coccus Chamelacus*.

Nat. Ord., Thymelacææ.

Common Names, *Mezereon*. *Spurge Olive*.

This is a very hardy shrub, three or four feet high, with a branching stem, and a smooth, dark gray bark, very easily separable from the wood. The leaves spring from the ends of the branches, are deciduous, sessile, obovate-lanceolate, entire, smooth, of a pale green color, somewhat glaucous beneath, and about two inches long. They are preceded by the flowers, which appear very early in the spring, and sometimes bloom even amidst the snow. These are of a pale rose-color, highly fragrant and disposed in clusters, each consisting of two or three flowers, forming together a kind of spike at the upper part of the stem and branches. At the base of each cluster are deciduous floral leaves. The fruit is oval, shining, fleshy, of a bright red color, and contains a single round seed.

This species of daphne is a native of Great Britain and the neighboring continent, in the northern parts of which it is particularly abundant. It is cultivated in Europe both for medical purposes and as an ornamental plant. The bark when fresh has a nauseous smell; its taste is at first sweetish, but afterwards highly acrid and even corrosive; when applied to the skin it produces inflammation followed by vesication.

Preparation.—The fresh bark, gathered in early spring before the flowers appear, is chopped and pounded to a pulp and weighed. Then two-thirds by weight of alcohol are taken, and the pulp well mixed with it, and then strained *lege artis* through a piece of new linen. This tincture is then poured into a well-stoppered bottle, and allowed to stand eight days in a dark, cool place, and filtered.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class II.

MILLEFOLIUM.

Synonyms, Achillea Millefolium, *Linn.* Achillea Myriophylli.

Nat. Ord., Compositæ.

Common Names, Yarrow. Milfoil. Nose-bleed.

This is a perennial herb, common to the old and new continents, though supposed to have been introduced into this country from Europe. It abounds in old fields, along fences, and on the borders of woods and of cultivated grounds, throughout the United States. It is from a foot to eighteen inches high, and is specifically distinguished by its doubly pinnate, downy, minutely divided leaves, with linear, dentate, mucronate divisions, from which it derived the name of milfoil, by its furrowed stem and calyx, and by its dense corymb of whitish flowers, which appear throughout the summer, from June to September. Both the flowers and leaves have an agreeable, though feeble aromatic odor, and a bitterish, astringent, pungent taste.

Preparation.—The fresh plant, gathered when flowering begins and the stems are not yet ligneous, is chopped and pounded to a pulp and pressed out *lege artis* in a piece of new linen. The expressed juice is then by brisk agitation mingled with an equal part by weight of alcohol. This mixture is allowed to stand eight days in a well-stoppered bottle, in a dark, cool place, and then filtered.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class I.

MIMOSA HUMILIS, Linn.

Nat. Ord., Leguminosæ.

This species, which is one of the smallest of the genus *mimosa*, is found in the prairies around Rio Janeiro. Its stem is feeble, rather woody, ramose, pubescent above and covered with very sharp prickles. The leaves are bipinnate, the pinnæ being three or four-paired, with small, linear folioles, which close at the least contact; there are from six to twelve on each side of the spike. The flowers are small, sessile, forming pretty silky tufts of a violet color. The fruit is somewhat triangular, flattened, covered with long and stiff hairs, and surrounded by a persistent pericarp, divided in two capsules, each of which contains one seed.

Preparation.—The fresh leaves are chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, pour into a well-stoppered bottle and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

MITCHELLA REPENS, Linn.

Nat. Ord., Rubiaceæ.

Common Names, Checker Berry. Partridge Berry. Squaw Vine.

This must not be confounded, on account of its common name, with the *Gaultheria Procumbens*. It is a smooth and trailing small ever-green herb, with round-ovate and shining petioled leaves, minute stipules, white fragrant flowers often tinged with purple, and scarlet edible (but nearly tasteless) dry berries, which remain over winter. The flowers are in pairs, with their ovaries united. Calyx four-toothed. Corolla funnel-form, four lobed; the lobes spreading, densely bearded inside, valvate in the bud. Stamens four. Style one; stigmas four, linear. Fruit a berry-like double drupe, crowned with the calyx-teeth of the two flowers, each with four small and seed-like bony nutlets. It is common throughout the United States, found in dry woods, creeping about the foot of trees, and flowering in June and July.

Preparation.—The fresh plant is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, pour it into a well-stoppered bottle and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

MOMORDICA BALSAMINA, Linn.

Synonym, Balsamina.

Nat. Ord., Cucurbitaceæ.

Common Name, Balsam Apple.

This is an annual climbing plant, a native of the East Indies, but cultivated in our gardens for the sake of the fruit. This is ovate, attenuated towards each extremity, angular, warty, not unlike a cucumber in appearance, of a lively red or orange-yellow color, easily falling when touched, and spontaneously separating into several pieces. The fruit contains numerous flat, oval, and wrinkled brownish seeds, which are surrounded with a fleshy red arillus.

Preparation.—The ripe fruit is chopped and pounded to a pulp and pressed out *lege artis* in a piece of new linen. The expressed juice is then, by brisk agitation, mingled with an equal part by weight of alcohol. This mixture is allowed to stand eight days in a well-stoppered bottle in a dark, cool place and then filtered.

Amount of drug power, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class I.

MONOBROMIDUM CAMPHORÆ.

Synonym, Camphora Monobromata.

Common Names, Monobromated Camphor. Bromated Camphor.

Formula, $C_{10} H_{15} Br O_2$.

Molecular Weight, 231.

Preparation of Monobromated Camphor.—Break 13 ounces of camphor into pieces of suitable size, put this into a quart retort, first filling the neck, raise the latter somewhat, and then introduce through the tubulure, by means of a funnel-tube, 4 ounces of bromine, washing the last down with 20 or 30 minims of alcohol. A brisk reaction will commence in about fifteen or twenty minutes, after it has subsided and the retort has become cool, introduce 8 to 9 ounces of bromine in four portions, waiting after each addition until the reaction has ceased. The addition of alcohol is not requisite, but facilitates the reaction; and the bromine may be added in larger quantities, if provision be made for condensing the vaporized bromine and returning it to the retort. This is now slowly heated to about $132^{\circ} C.$ ($270^{\circ} F.$), allowed to cool, the contents dissolved in warm petroleum benzin, the solution allowed to crystallize, and the crystals purified by recrystallization from hot alcohol or petroleum benzin. On evaporating the mixed mother-liquid, an oily mass is obtained, which, heated to $260^{\circ} C.$ ($500^{\circ} F.$), becomes black, and contains monobromate camphor, to be obtained by recrystallization as before.

In the above processes dibromide of camphor, $C_{10} H_{15} O Br_2$, is first formed, and this, on being heated, is decomposed into hydrobromic acid, $H Br$, and monobromated camphor, $C_{10} H_{15} Br O$, the latter representing a molecule of camphor, in which one atom of hydrogen is replaced by one of bromine. During the operation one-half of the bromine used is given off as hydrobromic acid, and may be collected in water or combined with a base.

Properties.—Monobromated camphor is in colorless needles or prisms, insoluble in water, freely soluble in alcohol, ether, and hot petroleum benzin, also in fixed oils. It is permanent in the air and light, has a somewhat camphoraceous odor and taste, fuses near 70° C. (158° F.), and boils at 274° C. (525° F.), with partial decomposition.

Preparation for Homœopathic Use.—Monobromated camphor is triturated as directed under Class VII.

MONOTROPA UNIFLORA, *Linn.*

Synonym, *Monotropa Morisoniana*.

Nat. Ord., Galacineæ.

Common Names, Bird's Nest. Corpse Plant. Ice Plant. Indian Pipe.

This is a low and fleshy herb, found in dark and rich woods from Maine to Carolina and westward to Missouri. The clustered stems spring from a ball of matted fibrous rootlets, furnished with scales or bracts in place of leaves; the flowering summit at first nodding, in fruit erect. The plant is smooth, waxy-white (turning black in drying), inodorous, with a single five-petalled and ten-anded flower at the summit; the calyx of two to four irregular scales or bracts; anthers transverse, opening by two chinks; style short and thick; stigma naked. It flowers in July and August.

Preparation.—The whole plant in flower is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, pour it into a well-stoppered bottle, and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Amount of drug power, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

MORPHIUM.

Synonyms, *Morphium Purum*. *Morphia*.

Common Name, Morphine.

Formula, $C_{17}H_{19}NO_3 \cdot H_2O$.

Molecular Weight, 303.

Preparation of Morphia.—Take of opium sliced, twelve troy ounces; water of ammonia, six fluid ounces; animal charcoal in fine powder, alcohol, distilled water, each a sufficient quantity. Macerate the opium with four pints of distilled water for twenty-four hours, and, having worked it with the hands, again macerate for twenty-four hours, and strain. In like manner, macerate the residue twice successively, with the same quantity of distilled water, and strain. Mix the infusions, evaporate to six pints, and filter; then add five pints of alcohol, and afterwards three fluid ounces of the water of ammonia, previously mixed with half a pint of alcohol. After twenty-four hours pour in the remainder of the water of ammonia, mixed, as before, with half a

pint of alcohol, and set the liquid aside for twenty-four hours that crystals may form. To purify these, boil them with two pints of alcohol until they are dissolved, filter the solution, while hot, through animal charcoal, and set it aside to crystallize.

Properties.—Morphia crystallizes in short, transparent, and colorless or white prisms, which require for solution about one thousand parts of cold and about five hundred parts of boiling water, thirty parts of boiling and fifty parts of cold alcohol, sixty parts (one hundred and seventy-five parts, Pettenkofer) of chloroform, and two hundred and twenty parts of glycerin. It is soluble in fusel oil, also in fixed alkalies and alkaline earths, less so in ammonia and its salts, but insoluble in benzol, fixed oils, and ether; the latter liquid dissolves some morphia in the amorphous state, which crystallizes after awhile. It is inodorous, and at first tasteless, developing, however, a bitter taste. Its solutions have an alkaline reaction upon test-paper, and with acid it yields salts, most of which are crystallizable. Heated at 120° C. (248° F.) it loses 5.95 per cent. of water of crystallization, and fuses to an oily liquid, which crystallizes on cooling; at a higher heat it is decomposed, and burns without leaving any residue.

Tests.—Commercial concentrated sulphuric acid dissolves morphia with a yellowish, afterwards gray color. Pure morphia, heated with pure sulphuric acid to 100° C. (212° F.) for half an hour, is colored pink-red (Prescott, 1877). Concentrated nitric acid imparts a blood-red color, changing to orange and yellow. Dissolved in sulphuric acid, and the solution heated to near 150° C. (302° F.), the addition of a little nitric acid colors violet-blue, changing quickly to blood-red, and afterwards to deep orange (Husemann, 1863). *Froehde's reagent* (1866) (0.001 sodium molybdate in 1 c. c. H_2SO_4) acquires a beautiful violet color, changing to blue, olive-green, yellow, and, in twenty-four hours, to purplish-blue. In the reaction of this reagent upon many alkaloids and other organic substances, a light or dark blue, or more or less green, color, is produced; the changes in color must, therefore, be noticed, and a larger amount of the molybdate in the test carefully avoided. Chlorine water added to morphia causes a yellow or orange color, which is deepened by alkalies; chlorinated alkalies or lime at once produce the orange color. Morphia decomposes iodic (Serullas) and periodic (Boedeker) acids, liberating iodine; in dilute solutions the addition of sulphuric acid is advisable; ammonia deepens the yellow color of the solution. Ferric chloride colors morphia and its salts deep blue, the color being destroyed by free acids and alcohol, but not by alkalies (Robinet). When a salt of morphia is heated with an excess of sulphuric or hydrochloric acid to near 150° C. (302° F.), the alkaloid parts with H_2O , and is converted into apomorphia, $\text{C}_{17}\text{H}_{17}\text{NO}_2$.

Preparation for Homœopathic Use.—Pure morphia is triturated, as directed under Class VII.

MORPHIUM ACETICUM.

Synonyms, Morphiae Acetas. Morphinum Aceticum.

Common Name, Acetate of Morphia.

Formula, $C_{17}H_{19}NO_3 \cdot C_2H_4O_2 \cdot H_2O$.

Molecular Weight, 363.

Preparation of Acetate of Morphia.—Take of morphia in fine powder, a troy ounce; distilled water, half a pint; acetic acid, a sufficient quantity. Mix the morphia with the distilled water; then carefully drop acetic acid into the mixture, stirring it constantly, until the morphia is neutralized and dissolved. Evaporate the solution, by means of a water-bath, to the consistence of syrup, and set it aside until it concretes. Lastly, dry the salt with a gentle heat, and rub it into powder.

Properties and Tests.—Acetate of morphia forms a white powder, which has a slight acetous odor and very bitter taste. It is readily and freely soluble in water, less freely soluble in alcohol, and soluble in sixty parts of chloroform; it is insoluble in ether. Cold, strong sulphuric acid dissolves it without color only when recently made. When kept on hand, it slowly loses acetic acid, and becomes incompletely soluble in water unless a little acetic acid be added; it gradually acquires a yellowish-gray and finally brownish color, and should then be redissolved in acetic acid and evaporated or converted into another salt of morphia. Its aqueous solution undergoes similar changes, the acetic acid being slowly decomposed with the separation of brown flocculent compounds, while the morphia crystallizes out, forming long prisms, if the solution is not disturbed. The salt contains 78.5 per cent. of anhydrous, or 83.5 per cent. of crystallized morphia. The salt responds to the morphia tests described on page 337, and leaves no residue when ignited. If its solution is precipitated by tannin, the addition of dilute hydrochloric acid redissolves the precipitate; a remaining turbidity would indicate the presence of narcotina.

Preparation for Homœopathic Use.—Pure acetate of morphia is triturated as directed under Class VII.

MORPHIUM MURIATICUM.

Synonyms, Morphiae Murias. Morphiae Hydrochloras. Hydrochlorate of Morphia.

Common Name, Muriate of Morphia.

Formula, $C_{17}H_{19}NO_3 \cdot HCl \cdot 3H_2O$.

Molecular Weight, 375.5.

Preparation of Muriate of Morphia.—Take of morphia in fine powder, a troy ounce; distilled water, four fluid ounces; muriatic acid, a sufficient quantity. Mix the morphia with the distilled water, then carefully drop muriatic acid into the mixture, stirring it constantly, until the morphia is neutralized and dissolved. Evaporate the solution, by means of a water-bath, so that on cooling it may crystallize. Lastly, drain the crystals and dry them on bibulous paper.

Properties and Tests.—Muriate of morphia crystallizes in white

silky needles, or transparent prisms having a bitter taste. It is soluble in twenty parts of cold, and in less than its own weight of boiling water, in sixty parts of cold, and in ten parts of boiling 80 per cent. alcohol, in nineteen parts of glycerin, and in eight hundred parts of olive oil; it is insoluble in ether. Heated to 130° C. (266° F.), it loses 14.36 per cent. of water of crystallization. It yields 75.9 per cent. of anhydrous, and 80.7 per cent. of crystallized morphia. The salt answers to all the morphia tests described on page 337; its aqueous solution yields, with nitrate of silver, a white precipitate, which is insoluble in nitric acid, but dissolves in ammonia.

Preparation for Homœopathic Use.—Pure muriate of morphia is triturated, as directed under Class VII.

MORPHIUM SULPHURICUM.

Synonyms, Morphæ Sulphas. Morphinum Sulphuricum.

Common Name, Sulphate of Morphia.

Formula, $(C_{17}H_{19}NO_3)_2H_2SO_4 \cdot 5H_2O$.

Molecular Weight, 758.

Preparation of Sulphate of Morphia.—Take of morphia in fine powder, a troy ounce; distilled water, half a pint; diluted sulphuric acid, a sufficient quantity. Mix the morphia with the distilled water; then carefully drop diluted sulphuric acid into the mixture, stirring it constantly, until the morphia is neutralized and dissolved. Evaporate the solution, by means of a water-bath, so that on cooling it may crystallize. Lastly, drain the crystals, and dry them on bibulous paper.

Properties and Tests.—It crystallizes in white fascicles of transparent needles, which, on being heated to 130° C. (266° F.), lose 11.8 per cent. of water of crystallization. It is soluble in two parts of water, less freely so in alcohol, and in five parts of glycerin (Adolphus, 1867). It is insoluble in ether. The salt yields 75.2 per cent. of anhydrous, and 79.94 per cent. of crystallized morphia, and when ignited leaves no residue. Its aqueous solution yields a white precipitate with chloride of barium, insoluble in nitric acid. To the reagents for morphia it has the behavior described on page 337.

Preparation for Homœopathic Use.—Pure sulphate of morphia is triturated, as directed under Class VII.

MOSCHUS.

Synonyms, Moschus Orientalis. Moschus Tibetanus. Moschus Tanguinensis.

Class, Mammalia.

Order, Ruminantia.

Family, Moschina.

Common Name, Musk.

The dried secretion from the preputial follicles of *Moschus Moschiferus*, Linn.

Origin.—The musk-deer resembles the deer (*cervus*), but differs

from it in the want of horns and in the canines, which are long and project considerably downwards from the lips of the male. It inhabits chiefly the mountainous regions and elevated tablelands of Central Asia, and is met with from Anam, in Farther India, northwestward to Thibet and northward in China and Tartary to Mantchooria and Southern Siberia. It lives in pine forests in the Himalayas, frequently at an altitude of 10,000 to 14,000 feet. The musk-sac is found in the male only, and is located on the abdomen, immediately before the preputial orifice and to the rear of the umbilicus. The animal has nocturnal habits, and is taken by snares and pitfalls, or sometimes by shooting; the sac is cut off as soon as possible, and rapidly dried by pressing it against heated stones.

Description.—The musk-bag (called sac, pod, or pouch) is oval in shape, about two inches long and one and a half inches wide, with a thickness of about half an inch. The upper surface is smooth and flat, the lower surface convex and hairy. The hairs are grayish and brown, rather stiff and appressed, and arranged in a circle towards the aperture near the centre of the bag, and in the form of a pencil towards the preputial orifice, which is about one-fourth inch in the rear of the former. From this orifice underneath the hairy skin between the strata of the muscular coat and towards the posterior end of the sac is a canal containing the front portion of the thin penis. Following the muscular coat is the musk-pouch proper, with an external fibrous coat, having on the inner surface numerous depressions resembling meshes and surrounded by folds, and covered by two coats, the one soft and pearly the other very delicate, silvery-white on the outside, and yellowish or brownish on the inside. The musk is supposed to be separated by a number of glands, of which two or more are situated in each depression. In the young animal, the secretion is slight and of a milky appearance; but after it has passed its third year, the musk is of better quality; in the fresh state it is of an unctuous consistence.

Musk is of a crummy appearance, near the musk orifice mixed with grayish hairs, of a reddish-brown color, or darker brown and irregularly granular, of a strong diffusible and persistent odor and bitterish taste. When entirely exsicated, it is almost inodorous, but the odor reappears on moistening and is increased by the addition of a little alkali. Musk should be kept in not too warm and dry a place where the air has some access to it.

Varieties.—Several varieties are known in commerce, the best being the *Chinese*, *Thibet*, or *Tonguin* musk. It is usually imported in small boxes, internally lined with sheet lead and containing about twenty-five sacs, each wrapped in paper. The outer hairs are trimmed short, and are of a yellowish or grayish color. Musk enters commerce through the Chinese ports. *Siberian musk* comes by way of St. Petersburg, hence the name *Russian musk*; it often resembles and has the same quality as the preceding; when in flatter ovate sacs with thinner and paler hairs, and of fainter, less aromatic, and more urinous odor, it is called *Cabardine musk*. The small and inferior *Bucharian* and *Assam musk* sacs rarely, if ever, reach this country. Chinese or Ton-

quin musk only should be employed in medicine, and should always be purchased in sacs.

Substitutions and Adulterations.—The substitution of artificial musk-bags, made from a piece of hide stitched to a membrane, is readily recognized by the absence of the circular arrangement of the hairs and of the central aperture. Genuine sacs are sometimes slit open, the musk partly removed, and other substances introduced in place thereof. This may usually be detected by the stitching on the edge of the hide and inside membrane. There is no means of detecting the fraudulent introduction through the orifice of pieces of lead, etc., until after the bags have been opened.

Tests.—Cold water dissolves about one-half the weight of the musk; the solution is deep brown, faintly acid, and scarcely disturbed by solution of corrosive sublimate. Weak alcohol yields a similar solution. Absolute alcohol dissolves about 10 per cent., yielding a slightly colored tincture, which scarcely becomes turbid on the addition of water. Carefully freed from fragments of skin and hairs and heated upon platinum foil, musk gives off an odor which is slightly urinous, but very distinct from the odor of burning blood, and leaves about 6 to 8 per cent. of a gray, not red, ash.

Preparation for Homœopathic Use.—A tincture is made, according to Altschul, of the whole bag, with dilute alcohol in the proportion of 1 to 20, the dilutions from which must be prepared as directed under Class IV, except that dilute alcohol is used for the 1 and 2x dilutions, in the proportion of twenty to eighty.

Triturations are prepared as directed under Class VII.

MUREX PURPUREA.

Synonyms, Murex Brandaris, *Buchner*. *Purpura Patula*.

Class, Mollusca.

Order, Gasteropoda.

Family, Muricidæ.

This seasnail is found in large quantities on the coasts of the Adriatic and Mediterranean Seas. The coloring juice is lodged in a bag between the heart and the liver, and does not always possess the fine red color, when taken out, but appears as a tough, sticky, colorless or greenish liquid, reddening gradually when exposed to the air.

Preparation.—The fresh juice is triturated, as directed under Class VIII.

A solution of the third trituration in water still shows a fine rose-red color.

MURURE LEITE.

Rosin obtained from *Yichetea Officinalis*.

Preparation.—The rosin is triturated, as directed under Class VII.

MYGALE AVICULARIA.

Synonym, *Aranea Avicularis*.

Class, *Arachnoidea*.

Order, *Araneidea*.

Family, *Mygalidæ*.

Common Name, Bird Spider.

The bird spider of Texas had been used for some years, without any recorded proving. A proving has, however, since been published in the *Hahnemannian Monthly*, Vol. V.

Preparation.—The live insect is crushed and covered with five parts by weight of alcohol. Having been put into a stoppered bottle, it is allowed to remain eight days in a dark, cool place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Amount of drug power, $\frac{1}{16}$.

Dilutions must be prepared as directed under Class IV.

MYGALE LASIODORA.

Synonym, *Mygale Lasiodora Cubana*.

A large black Cuban Spider.

Preparation.—The live insect is crushed and covered with five parts by weight of alcohol, and allowed to remain eight days in a well-stoppered bottle, in a dark, cool place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Amount of drug power, $\frac{1}{16}$.

Dilutions must be prepared as directed under Class IV.

MYRICA CERIFERA, Linn.

Nat. Ord., *Myricaceæ*.

Common Names, Bayberry. Candle Berry. Sweet Gale. Wax-myrtle.

This is an indigenous shrub, growing in great abundance in the sandy soil along the sea-shore, and even on the shores of our northern lakes. The genus is characterized by its sterile flowers in cylindrical, and its fertile in ovoidal closely imbricated catkins, without calyx or corolla, solitary under a scale-like bract with a pair of bractlets; the stamens two to eight, with filaments somewhat united below; the ovary with three scales at its base, and two thread-like stigmas; the fruit a small spherical nut. The leaves of the wax-myrtle are oblong-lanceolate, narrower at their base, entire or somewhat toothed near the apex, shining, with resinous dots on both sides, and very fragrant when rubbed. The fruit is covered with a coating of white wax, and sometimes continues on the plant for two years or more. The shrub is from three or four to ten feet high, often thickly crowded, and, under such circumstances, scenting the air with its spicy odor.

Preparation.—The fresh bark of the root is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, pour it into a

well-stoppered bottle, and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{4}$.

Dilutions must be prepared as directed under Class III.

MYRISTICA SEBIFERA, Swartz.

Synonym, *Virola Sebifera*, Aublet.

Nat. Ord., Myristicaceæ.

Common Name, Brazilian Ucuuba.

This tree is found in the provinces of Para and Rio Negro. The tree is of some height, the trunk and branches of which are covered with a thick, brownish and reticulate bark. Leaves alternate, oblong, cordate, rather tomentose on their lower surface, and supported by short petioles. Flowers in tufted panicles, ramose, arising from the axil of the leaves or the extremities of the branches; they are dioicous, with a simple, urceolate perigone having three divisions. Male flowers with six stamens, the filaments of which are attached to each other, and are inserted in a glandular disk. The female flowers are smaller, one unilocular, ovary, style wanting, stigma bilobed. Capsular berry, with two valves, containing an oleaginous seed, surrounded by an aril crenated above.

Preparation.—The fresh, red juice, obtained by puncturing the bark, is triturated according to Class VIII.

MYRTUS COMMUNIS, Linn.

Nat. Ord., Myrtaceæ.

Common Name, Myrtle.

The myrtle is a shrub or small tree inhabiting the countries near the Mediterranean, and frequently cultivated. It has a dark grayish-brown, fissured, astringent bark, and opposite, smooth and glossy, entire leaves, varying in length from half an inch to two inches, and in shape from ovate to linear-lanceolate and mucronate; they are on very short petioles, are densely pellucid-punctate, and bear in their axils a white or light pinkish flower with numerous stamens. The fruit is a roundish oval or sub-globular, fleshy, bluish-black berry, with two cells, each containing four or five whitish kidney-shaped seeds. The leaves, flowers, and fruit have a very agreeable odor.

Preparation.—The fresh, flowering shoots, and leaves, are chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, pour it into a well-stoppered bottle and let it stand eight days in a dark cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{4}$.

Dilutions must be prepared as directed under Class III.

NABULUS ALBUS, Hooker.

Synonyms, Nabulus Serpentaria. Prenanthes Alba, Linn.

Nat. Ord., Compositæ.

Common Names, Rattlesnake-Root. White Lettuce. Lion's Foot.

This North American perennial grows in rich soil on the borders of woods, and flowers in July and August. The stem is three to six feet high, purplish and glaucous, branched above, and grows from a bitter, tuberous, spindle-shaped root. The leaves are petiolate, angular, hastate; the radical ones palmately five or seven-lobed, those of the stem ovate-roundish and sinuate-toothed; the flower-heads are in loose racemose cymes, drooping; have a cylindrical involucre, with the linear, purplish, and white scales in a single row, and a few bractlets at the base, and contain from eight to twelve ochroleucous or purplish florets, with linear-oblong, striate, and unbeaked akenes, and a pale brownish pappus composed of several rows of rough hairs. All parts of the plant contain a milky juice, and have a bitter taste. The variety *serpentaria* has the lower leaves almost palmately divided, and the stem leaves three-lobed or deeply toothed.

Preparation.—The fresh plant, is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, pour it into a well-stoppered bottle, and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

NAJA.

Synonyms, Naja Tripudians. Coluber Naja.

Class, Reptilia.

Order, Squamata.

Family, Elapidæ.

Common Names, Cobra di Capello. Hooded Snake.

This species of snake is commonly found in Hindostan. It varies in length from two to four feet. The neck can be dilated so as to give the appearance of a hood covering the head. It is the snake usually employed by the snake-charmers. The fangs are canaliculated, and are in front of the superior maxilla, with smaller solid teeth behind them. The sixth upper labial scale is small, forming a suture with a very large temporal scale; there is generally a spectacle-like mark on the neck. The poison of this serpent was partially proved by Dr. Rutherford Russell.

Preparation.—The poison, obtained by compressing the gland (of the live animal) which secretes it, is triturated as directed under Class VIII.

NAPHTHALINUM.

Synonyms, Naphthalin. Naphthalene.

Formula, $C_{10}H_8$.

Molecular Weight, 128.

Origin.—Naphthalin was discovered by Garden (1820) in coal-tar oil, and recognized by Reichenbach as resulting from the decomposition of the products of distillation of coal. It has since been obtained from a large number of organic bodies, particularly if the distillation products are conducted through a red-hot tube.

Preparation.—Coal-tar is distilled, and that portion collected by itself which passes over between 170° and 200° C. (338° and 392° F.), or the distillation is continued until the contents of the retort begin to char. The dark colored product is purified by resubliming it two or three times.

Properties.—Naphthalin forms large, colorless and transparent, glossy laminae, which have a faint and peculiar odor. According to Kopp (1855) it fuses at 79.2° C. (174.6° F.), forming a colorless liquid, and crystallizes again on cooling. It volatilizes slowly at the ordinary temperature, and boils at 218° C. (424.4° F.). When heated in the air, its vapors are ignited with difficulty, and burn rapidly with a red and sooty flame. It is insoluble in water, freely soluble in hot alcohol, in ether, bisulphide of carbon, chloroform, and in warm fixed and volatile oils. On dissolving it together with picric acid in hot alcohol, the two compounds unite, forming, on cooling, golden-yellow needles, having the composition $C_{10}H_8 \cdot C_6H_3(NO_2)_3O$, and yielding all the picric acid to ammonia. Naphthalin yields with chlorine and bromine numerous products of addition and substitution. When treated with strong nitric acid, *nitronaphthalins* are generated, which, by the action of reducing agents, are converted into *naphthylamina* $C_{10}H_7 \cdot NH_2$, which is crystallizable, turns red in the air, and the salts of which yield blue, and finally purple-colored precipitates with ferric chloride, chromic acid, and other oxidizing agents.

Preparation for Homœopathic Use.—Pure naphthalin is triturated, as directed under Class VII.

NARCOTINUM.

Synonyms, Narcotina. Narcotin. Narcotia.

Formula, $C_{44}H_{23}NO_{14}$.

Molecular Weight, 413.

Preparation of Narcotina.—Narcotina was discovered by Desrosne (1803). It is usually obtained mixed with morphia in the processes for procuring that principle, and may be separated by the action of ether, which dissolves it without affecting the morphia, and yields it upon evaporation. It may also be obtained by digesting opium in ether, and slowly evaporating the ethereal solution, which deposits crystals of narcotina. It is said that the same result may be obtained by using the oil of turpentine as the menstruum, first heating it with opium and then evaporating the solution.

Properties.—It is white, tasteless, and inodorous; and crystallizes in silky flexible needles, usually larger than the crystals of morphia, fusible at 240° and volatilizable at 310° , insoluble in cold water, soluble in 400 parts of boiling water, in 100 parts of cold and 24 of boiling alcohol, which deposits it upon cooling, and very soluble in ether. It may be distinguished from morphia by its insipidity, solubility in ether, and insolubility in alkaline solutions, by not affecting vegetable colors, by assuming a yellowish instead of a blood-red color under the action of strong nitric acid, by not decomposing iodic acid, and by not producing a blue color with the salts of iron.

Preparation for Homœopathic Use.—Pure narcotina is triturated as directed under Class VII.

NATRUM ARSENICICUM.

Synonyms, Arsenias Natricus. Arsenias Sodicus. Natri Arsenias. Sodæ Arsenias. Sodii Arsenias. Arseniate of Sodium. Arseniate of Soda.

Formula, $\text{Na}_2\text{HAsO}_4 \cdot 7\text{H}_2\text{O}$.

Molecular Weight, 312.

Common Name, Arsenate of Soda.

Preparation of Arseniate of Soda.—Take of arsenious acid in fine powder, two troy ounces; nitrate of sodium in fine powder, 816 grains; dried carbonate of sodium in fine powder, 528 grains; distilled water, boiling hot, half a pint. Having mixed the powders thoroughly, put the mixture into a large clay crucible and cover it with the lid. Expose the mixture to a full red heat until effervescence has ceased, and complete fusion has taken place. Pour the fused salt on a porcelain slab, and, as soon as it has solidified, and while it is still warm, put it into the hot water and stir until it is dissolved. Filter the solution and set it aside to crystallize. Drain the crystals, and, having dried them rapidly on filtering paper, keep them in a well-stoppered bottle.

Properties.—Arseniate of soda crystallizes in colorless transparent prisms, which usually contain $7\text{H}_2\text{O}$, or 40.4 per cent.; when obtained at a low temperature they contain $12\text{H}_2\text{O}$, or 53.7 per cent. The officinal salt is slightly deliquescent in a moist atmosphere, but in dry air it effloresces and loses $5\text{H}_2\text{O} = 28.8$, the white powder which is finally left having the composition $\text{Na}_2\text{HAsO}_4 \cdot 2\text{H}_2\text{O}$, and containing 16.2 per cent. of water of crystallization, which is given off above 130°C . (266°F .). The salt dissolves in from two to three parts of water; the solution has an alkaline reaction, and yields white precipitates with the soluble salts of barium, calcium, iron, and lead, and a red-brown precipitate with nitrate of silver, all the precipitates being soluble in nitric acid.

Tests.—Sulphuretted hydrogen produces in the cold slowly, but rapidly on being acidulated and heated, a yellow precipitate which is completely soluble in sulphydrate of ammonium. When heated upon charcoal before the blow-pipe, the salt gives off an alliaceous odor. An aqueous solution of ten grains of the residue, left after heating the salt

to 150° C. (302° F.), treated with 53 grain-measures of the volumetric solution of soda, continues to give a precipitate with the volumetric solution of nitrate of soda, until 1,613 grain measures of the latter have been added.

Preparation for Homœopathic Use.—Pure arseniate of sodium is triturated as directed under Class VII.

NATRUM CARBONICUM.

Synonyms, Carbonas Sodicus. Disodic Carbonate. Sodæ Carbonas. Sodii Carbonas. Carbonate of Sodium. Sal Soda.

Common Name, Washing Soda.

Formula, $\text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O}$.

Molecular Weight, 286.

Origin and Preparation of Carbonate of Sodium.—Carbonate of sodium exists in a large number of mineral waters, mostly, however, as bicarbonate. It is contained in the waters of certain lakes in India, Egypt, Central Africa, Mexico, and South America, and is found in the ashes of many plants growing near the sea-shore, such as *Salsola*, *Statice*, *Salicornia*, *Atriplex*, *Mesembryanthemum*, and others. The ashes are known in commerce as *barilla*, *salicor*, etc., the former containing nearly 30 per cent., the latter about 14 per cent. of sodium carbonate. *Kelp* and *varec*, the ashes of various marine algæ, contain much less soda and are at present not employed for obtaining this salt. Egyptian *trona*, a native carbonate of sodium, contains both carbonate and sesquicarbonate. In Hungary and some other countries, carbonate of sodium effloresces from the earth.

The most important sources of this salt are cryolite and the sulphate and chloride of sodium. *Cryolite* is a mineral found in Greenland, and consists of fluoride of sodium and aluminium. When boiled with an excess of burned lime, insoluble fluoride and aluminate of calcium are obtained, and caustic soda remains in solution; and when a mixture of cryolite and chalk is cautiously heated to redness, but not to fusion, fluoride of calcium and aluminate of sodium are produced, this last compound being soluble in water and decomposed by carbonic acid, which precipitates hydrate of aluminium and generates carbonate of sodium.

Properties.—As obtained in commerce, carbonate of sodium is in large, colorless, rhombic crystals, or frequently in crystalline lumps, and has a harsh alkaline taste, and a decided alkaline reaction. On exposure, it becomes white and friable from the loss of water of crystallization, the amount of this loss depending upon the temperature; the last molecule of water is expelled near the temperature of boiling water. The salt is insoluble in alcohol and ether, but dissolves in about two parts of water at ordinary temperature.

Tests.—Commercial carbonate of sodium usually contains small but variable quantities of sulphate and chloride, and its solution in water acidulated with nitric acid, therefore, produces precipitates with barium chloride and with nitrate of silver. Cryolite is the source of an impurity which is sometimes met with, and which consists of alumina,

rendered soluble in water by the soda; it is best detected by acidulating its solution in water with hydrochloric acid, heating to boiling, and then supersaturating with ammonia, when gelatinous aluminium hydrate will be precipitated. The British Pharmacopœia directs that 143 grains of it should require for neutralization at least 960 grain-measures of the volumetric solution of oxalic acid, consequently the salt should contain not less than 96 per cent. of crystallized carbonate of sodium.

Pure Carbonate of Sodium.—This is obtained by recrystallizing the commercial salt from distilled water, until free from the impurities described above. Twenty grains of it neutralize 9.7 grains citric acid, or 10½ grains tartaric acid.

Preparation for Homœopathic Use.—Pure carbonate of sodium is triturated as directed under Class VII.

NATRUM HYDROBROMICUM.

Synonyms, Bromuretum Sodicum. Natrum Bromatum. Sodii Bromidum. Sodium Bromide.

Common Name, Bromide of Sodium.

Formula, Na Br.

Molecular Weight, 103.

Preparation of Bromide of Sodium.—Bromide of sodium may be prepared in a manner similar to bromide of potassium. A solution of ferrous bromide, boiled with a solution of carbonate of sodium, yields a precipitate, the filtrate from which is evaporated and crystallized.

Properties and Tests.—At a temperature of about 20° C. (68° F.) and below, colorless, transparent, oblique, rhombic prisms are obtained, having the composition Na.Br. 2H₂O, and, when heated, melt and give off the water of crystallization. But when the solution is kept at a temperature above 30° C. (86° F.), anhydrous cubes of bromide of sodium are obtained, which have a rather alkaline taste, though neutral to test-paper, and dissolve in one and a quarter times their weight of cold, and less than their own weight of hot water. The salt differs from bromide of potassium in imparting a yellow color to flame, and in not being precipitated from its concentrated solution by a strong solution of acid tartrate of sodium.

Preparation for Homœopathic Use.—Pure bromide of sodium is triturated as directed under Class VII.

NATRUM HYPOPHOSPHORICUM.

Synonyms, Natrum Hypophosphorosum. Sodii Hypophosphis.

Common Name, Hypophosphite of Soda.

Formula, Na H₂ PO₂. H₂O.

Molecular Weight, 106.

Preparation of Hypophosphite of Sodium.—An aqueous solution of hypophosphite of calcium is accurately precipitated by carbonate of sodium; insoluble carbonate of calcium and soluble hypophosphite of sodium are produced and separated by filtration; on evaporating the filtrate, the latter salt is left behind, and may be freed

from carbonate of sodium by redissolving it in alcohol, filtering and evaporating. During the evaporation, decomposition with explosion has occasionally been noticed, which was probably caused by too high a heat; the temperature of the evaporating solution should therefore be kept below that of boiling water.

Properties.—Hypophosphite of sodium is usually obtained in the form of a white granular salt, but by the slow evaporation of its alcoholic solution may be procured in pearly tabular crystals, which, when dried over sulphuric acid and afterwards heated not quite to 200° C. (392° F.), lose nearly seventeen per cent. of water. At a higher heat, spontaneously inflammable phosphoretted hydrogen is evolved, and a porous mixture of pyrophosphate and metaphosphate of sodium is left. The salt has a peculiar bitter saline taste, is deliquescent in the air, though less so than hypophosphite of potassium, and is easily soluble in water and likewise in absolute alcohol, but is insoluble in ether. When evaporated with dilute nitric acid and finally ignited, a residue is obtained weighing ninety-seven per cent. of the weight of the hypophosphite, and consisting of metaphosphate of sodium.

Preparation for Homœopathic Use.—Pure hypophosphite of sodium is triturated as directed under Class VII.

NATRUM MURIATICUM.

Synonyms, Chloruretum Sodicum. Natrium Chloratum Purum. Sodii Chloridum. Chloride of Sodium. Sodium Chloride.

Common Names, Common Salt. Table Salt.

Formula, Na Cl.

Molecular Weight, 58.5.

Origin and Preparation of Chloride of Sodium.—Chloride of sodium is found native in extensive beds and in different geological formations, though mostly associated with clay and sulphate of calcium, and constitutes *rock salt* or *sal gem* if very pure and transparent. This is mined, mechanically freed from the adhering impurities, and sold as rock salt, or purified by re-crystallization. In some places holes are dug into the rock filled with water, which is pumped up when nearly saturated with salt, and evaporated. Most saline springs contain chloride of sodium. Sea-water is a solution of various salts, prominent among which is chloride of sodium, which is contained in the water of the large oceans to the amount of from 2.6 to 2.9 per cent., but is much less in the large bays and seas which are surrounded by land, and sinks, for instance, in the water of the Baltic Sea, to one-half per cent. The extraction of the salt from sea-water depends upon the climate, the water being removed either by freezing or by evaporation. When frozen, sea-water yields pure ice, and leaves a more concentrated saline solution. In warmer countries the concentration is effected by spontaneous evaporation in shallow pits, the brine as it concentrates being conducted into other pits, and finally into reservoirs, where the salt is deposited.

The mother-liquors, which are obtained in the various processes described, are solutions of various salts, usually sulphates and chlorides,

in some cases, also, of bromides of sodium, potassium, calcium, and magnesium, and they frequently yield salts or double salts of definite composition by being concentrated and exposed to either a low or an elevated temperature; they are used up in the preparation of sulphate of sodium, sulphate of magnesium, and bromine.

Properties.—When crystallized by spontaneous evaporation, chloride of sodium forms transparent tubes; but when the solution is evaporated at an elevated temperature, the crystals aggregate on the surface of the liquid in the form of hollow pyramids. It is very frequently kept in the form of a white, granular, crystalline powder, which is permanent in the air, unless contaminated with chloride of magnesium, when it becomes moist in a damp atmosphere. On the application of heat chloride of sodium usually decrepitates, and at a red heat it melts and is slowly volatilized. It has a neutral reaction to test-paper, a density of 2.16 and a purely saline taste. It is very sparingly soluble in strong alcohol, and requires a little less than three parts of hot or cold water for solution. On cooling the saturated aqueous solution to below the freezing point of water, transparent colorless prisms, $\text{Na Cl} \cdot 2\text{H}_2\text{O}$, are obtained, which melt above 0°C . (32°F .), and deposit a granular powder of the anhydrous salt. Dilute aqueous solutions of sodium chloride produce at a low temperature ice which is free from the salt; and concentrated solutions deposit crystals of the salt before they freeze.

Composition.—Chloride of sodium contains 60.6 per cent. of chlorine and 39.4 per cent. of sodium. Heated with sulphuric acid, hydrochloric acid is given off.

Tests.—The aqueous solution of chloride of sodium is not precipitated by chloride of platinum (absence of *potassium*), but gives with nitrate of silver a white precipitate, soluble in ammonia, but insoluble in nitric acid (chloride). When pure, it is not precipitated by carbonate of sodium (absence of *calcium*, *magnesium*, etc.), chloride of barium (sulphate), sulphuretted hydrogen, or sulphhydrate of ammonium (*compounds of heavy metals*).

Preparation for Homœopathic Use.—One part by weight of pure chloride of sodium is dissolved in nine parts by weight of distilled water.

Amount of drug power, $\frac{1}{10}$.

Dilutions must be prepared as directed under Class V— α .

Triturations are prepared as directed under Class VII.

NATRUM NITRICUM.

Synonyms, Nitras (Azotas) Sodicus. Nitrum Cubicum. Sodii Nitras. Sodie Nitrate.

Common Names, Nitrate of Soda. Cubic Nitre. Chili Saltpetre.

Formula, Na NO_3 .

Molecular Weight, 85.

A native salt, purified by crystallization from water.

Origin and Preparation of Nitrate of Sodium.—Nitrate of sodium is found in immense quantities, in certain districts of Chili and

Peru, imbedded in clay and sand, and more or less mixed with sulphates and chlorides of sodium, calcium, and magnesium. The stratum containing this saline mass, which is called *caleche* or *terra salitrosa*, is blasted, the salt extracted by boiling with water, and the decanted solution crystallized. In this condition nitrate of sodium is brought into the market in damp crystalline masses, which are more or less colored by intermixed earth, and require to be purified by re-crystallization. The United States import about 50,000,000 pounds annually.

Properties.—Purified nitrate of sodium crystallizes in colorless obtuse rhombohedrons, which are permanent in dry air, slightly deliquescent on exposure, and are soluble at ordinary temperature in a little more than their own weight, and at the boiling point in one-half their weight, of water. The salt has a cooling, saline, and somewhat bitter taste, melts when heated to about 310°C . (590°F .), and congeals on cooling to a white mass. It is decomposed when heated to redness, oxygen and afterwards nitrogen and some hyponitric acid being given off. Thrown on the fire it deflagrates, and when mixed with inflammable substances it detonates less violently than nitrate of potassium. It is slightly soluble in strong alcohol and in wood-spirit. The hot aqueous solution mixed with chloride, carbonate, or sulphate of potassium yields crystals of nitrate of potassium.

Tests.—On being warmed in a test-tube with sulphuric acid and fragments of copper, red nitrous vapors are given off. The concentrated aqueous solution is not precipitated by a solution of bitartrate of sodium (absence of *potassium*), and yields no precipitates with nitrate of barium (*sulphate*) or nitrate of silver (*chloride* or *iodide*). The presence of iodide is detected by treating the solution with a little chlorine water, and agitating it with bisulphide of carbon, when this liquid will assume a purplish color, and if this color is produced only after treatment with diluted sulphuric acid and zinc, *iodate* is present. *Metals*, if present, would be indicated by a precipitate with sulphuretted hydrogen or sulphhydrate of ammonium, and *earthy impurities* by a white precipitate with carbonate of sodium. One hundred grains of pure sodium nitrate, treated with an excess of sulphuric acid and afterwards heated to redness until vapors cease to be given off, yield a residue weighing 83.5 grains.

Preparation for Homœopathic Use.—Pure nitrate of sodium is triturated as directed under Class VII.

NATRUM PHOSPHORICUM.

Synonyms, Natri Phosphas. Phosphas Natricus. Sodæ Phosphas. Sodii Phosphas. Phosphate of Sodium.

Common Name, Phosphate of Soda.

Formula, $\text{Na}_2\text{HPO}_4 \cdot 12\text{H}_2\text{O}$.

Molecular Weight, 358.

Preparation of Phosphate of Sodium.—Take of bone calcined to whiteness and in fine powder, one hundred and twenty troy ounces; sulphuric acid, seventy-two troy ounces; carbonate of sodium, water,

each a sufficient quantity. Mix the powder with the sulphuric acid in an earthen vessel; then add eight pints of water, and, having stirred the mixture thoroughly, digest for three days, occasionally adding a little water to replace that which is lost by evaporation, and frequently stirring the mixture. At the expiration of that time, pour in eight pints of boiling water, and strain through muslin, gradually adding more boiling water until the liquid passes nearly tasteless. Set by the strained liquid that the dregs may subside, and, having poured off the clear solution, boil it down to eight pints. To the concentrated liquid, poured off from the newly formed dregs, and heated in an iron vessel, add, gradually, carbonate of sodium previously dissolved in hot water, until effervescence ceases, and the phosphoric acid is completely neutralized; then filter the liquid and set it aside to crystallize. Having removed the crystals, add, if necessary, a small quantity of carbonate of sodium to the liquid, so long as crystals are produced. Keep the crystals in a well-stoppered bottle.

Properties.—This salt crystallizes in colorless, transparent, obliquely four-sided prisms, which are of the specific gravity 1.55, react slightly alkaline upon test-paper, and have a cooling saline taste. The crystals effloresce somewhat in dry air, melt when heated to 35° C. (95° F.) and congeal on cooling to a crystalline mass. At 100° C. (212° F.) they part with their water of crystallization, amounting to 60.3 per cent., and are converted into a white saline mass. Above 300° C. (572° F.) the basylous water is expelled and pyrophosphate of sodium is left; $2 \text{Na}_2 \text{HPO}_4$ yields $\text{H}_2 \text{O} + \text{Na}_4 \text{P}_2 \text{O}_7$. Crystallized phosphate of sodium requires at 10° C. (50° F.) 16 times, at 20° C. (68° F.) nearly 7 times, at 30° C. (86° F.) $2\frac{1}{2}$ times, and at the boiling point $\frac{3}{4}$ times its weight of water for solution. The solution saturated at a higher temperature deposits near 35° C. (95° F.) transparent crystals, which contain only 47 per cent. of water of crystallization, and have the formula $\text{Na}_2 \text{HPO}_4 \cdot 7 \text{H}_2 \text{O}$. Phosphate of sodium is insoluble in alcohol, and imparts a yellow color to flame.

Tests.—The aqueous solution yields with nitrate of silver a yellow precipitate, soluble in nitric acid and in ammonia (*orthophosphate*), and with ferric chloride a white precipitate insoluble in acetic acid. The solution does not effervesce with acids (absence of *carbonate*), is not rendered turbid by ammonia (*magnesium* or traces of *calcium*), yields a white precipitate with chloride of barium, which is completely soluble in nitric acid (absence of *sulphate*), after having been acidulated with hydrochloric acid, is not colored or precipitated by sulphuretted hydrogen (absence of *arsenic*, *copper*, etc.).

Preparation for Homœopathic Use.—Pure phosphate of sodium is triturated as directed under Class VII.

NATRUM SALICYLICUM.

Synonym, Salicylate of Sodium.

Preparation of Salicylate of Sodium.—Salicylate of sodium is prepared by adding salicylic acid to a cold solution of pure soda containing ten per cent. of caustic soda as long as it is dissolved, filtering

and evaporating to dryness. Or ten parts of salicylic acid are mixed with water into a thin paste, and to this mixture ten parts of pure crystallized carbonate, or six parts of pure bicarbonate of sodium are added; after the evolution of carbonic acid gas has ceased, the solution is perfectly neutralized with a little caustic soda, and evaporated to dryness.

Properties.—The salt forms a white powder, has a sweet, afterwards acid taste, dissolves in rather less than its own weight of cold water, and is soluble in alcohol, but sparingly soluble in absolute alcohol. Prepared by the second process, it has the composition $\text{Na H C}_7\text{H}_4\text{O}_3$; but if made by the first process, Hager (1876) found it to yield 33 per cent. of residue when incinerated; its composition will therefore be nearly $\text{Na}_2\text{C}_7\text{H}_4\text{O}_3$.

Preparation for Homœopathic Use.—Pure salicylate of sodium is triturated as directed under Class VII.

NATRUM SULPHO-CARBOLICUM.

Synonyms, Sodii Sulphocarbolas. Sodium Sulphocarbolate.

Common Names, Sulphocarbolate of Sodium. Sulphophenate (Phenolsulphonate) of Sodium.

Formula, $\text{Na C}_6\text{H}_5\text{SO}_4 \cdot 2\text{H}_2\text{O}$.

Molecular Weight, 232.

Origin and Preparation of Sulphocarbolate of Sodium.—

If one part of crystallized carbolic acid is dissolved in an equal weight of strong sulphuric acid, there results a new acid, *sulphocarbolic* or *ortho-phenolsulphuric acid*, which was discovered by Laurent (1841); $\text{C}_6\text{H}_5\text{HO} + \text{H}_2\text{SO}_4$ yields $\text{C}_6\text{H}_5\text{HSO}_4 + \text{H}_2\text{O}$. The mixture is digested for two or three days at a temperature of about 50°C . (122°F .), and then diluted with twenty parts of water. To the liquid are added in small quantities and with frequent stirring two parts of carbonate of barium until effervescence ceases, when a solution of *sulphocarbolate of barium* results, and a white deposit takes place, consisting of the excess of carbonate of barium employed, and of sulphate of barium produced by free sulphuric acid. On adding carbonate of sodium to the filtrate, double decomposition will take place, carbonate of barium being precipitated, while sulphocarbolate of sodium remains in solution, and is obtained crystallized on concentrating the clear liquid. Sulphate of sodium may be substituted for the carbonate with identical results, except that the precipitate consists of sulphate of barium; and carbonate of lead may be used in place of carbonate of barium, sulphocarbolate of lead being likewise soluble in water.

Properties.—Sulphocarbolate of sodium crystallizes in transparent rhombic prisms, which are permanent in the air, and are soluble in about five parts of water, and also soluble in alcohol and in glycerin. When fused together with caustic potassa, *pyrocatechin* is obtained. If during the preparation of sulphocarbolic acid the temperature is permitted to rise to near the-boiling point of water *paraphenolsulphonic acid* having the same composition as the acid described above is formed; it yields a sodium salt, which crystallizes in hexagonal tables without

water of crystallization, is less freely soluble in water, and when fused with potassa yields *resorcin*.

Tests.—The aqueous solution of sulphocarbolate of sodium acquires a violet color on the addition of ferric chloride, and is not rendered turbid by chloride of barium.

Preparation for Homœopathic Use.—Pure sulphocarbolate of sodium is triturated as directed under Class VII.

NATRUM SULPHURICUM.

Synonyms, Sodæ Sulphas. Sodii Sulphas. Sodium Sulphide. Sulphate of Sodium.

Common Names, Glauber's Salt. Sulphate of Soda.

Formula, $\text{Na}_2\text{SO}_4 \cdot 10\text{H}_2\text{O}$.

Molecular Weight, 322.

Origin and Preparation of Sulphate of Sodium.—Sulphate of sodium is found native in the anhydrous state and crystallized, and also in combination with sulphate of calcium. It is present in the water of many mineral springs and of certain lakes in Russia, and in the western part of the United States. But for commercial purposes it is obtained as a secondary product in many chemical processes, as in the preparation of carbonate of magnesium; in the manufacture of hydrochloric and nitric acids, from chloride and nitrate of sodium; in the preparation of table salt from many saline springs; in the manufacture of sal ammoniac from sulphate of ammonium and chloride of sodium; in preparing carbonic acid for the manufacture of mineral waters, from bicarbonate of sodium and sulphuric acid; and in several other processes. Sulphate of sodium, as thus obtained, is purified by crystallizing it from water, if necessary, after neutralization with sodium carbonate.

Properties.—Sulphate of sodium crystallizes in large, transparent, oblique prisms, which do not alter the color of red and blue litmus paper, have a cooling, saline and bitter taste, and effloresce on exposure to the air, leaving a white powder. At a temperature of 33°C . (91.4°F .) the salt melts, and a portion of it separates in the anhydrous state. It is insoluble in alcohol, but dissolves freely in water, requiring about three parts of cold, and one-fourth part of water of 34°C . (93.2°F .) for solution. At a higher temperature the salt is somewhat less soluble. On carefully cooling the solution and keeping it free from dust, the liquid becomes supersaturated, but crystallizes on exposure. When heated the salt parts with its water of crystallization, and at a full red heat melts, without being decomposed. It imparts a yellow color to flame, and its solution yields, with chloride of barium, a white precipitate, which is completely insoluble in dilute nitric acid.

Tests.—An aqueous solution of sulphate of sodium does not effervesce on the addition of hydrochloric acid (absence of *carbonate*), is not precipitated by sulphuretted hydrogen (*heavy metals*), or a dilute solution of nitrate of silver (chloride), and does not give off ammoniacal vapors on being treated with a warm solution of caustic soda (absence of *ammonium salt*). One hundred grains of it dissolved in distilled

water, and acidulated with hydrochloric acid give, by the addition of chloride of barium, a white precipitate which, after washing and drying, weighs 72.2 grains.

Preparation for Homœopathic Use.—Pure sulphate of sodium is triturated as directed under Class VII.

NEPETA CATARIA, *Linn.*

Synonym, *Cataria Vulgaris*, *Mæsch.*

Nat. Ord., Labiatae.

Common Names, Catnep. Catmint.

This is a perennial herbaceous plant two to three feet high, indigenous to many parts of Asia and Europe, and naturalized in the United States, where it grows near dwellings, in waste places, and along roadsides. The stem is quadrangular, gray, hairy and branched; leaves opposite, petiolate, one to three inches long, triangular ovate, cordate at base, pointed at apex, the margin strongly crenate-serrate, grayish-green, soft hairy above and velvety beneath. The flowers are in terminal panicles, the lower stalked, the upper sessile, with a gray, hairy, obliquely five-toothed calyx, and a whitish, purple-spotted corolla, which is hairy on the outside, has the three-lobed lower lip crenately toothed, and four stamens inserted in its tube. It has a peculiar mint-like, rather disagreeable odor, and a bitterish, aromatic and pungent taste.

Preparation.—The fresh leaves and flowering tops, gathered in June or July, are chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, pour it into a well-stoppered bottle, and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Amount of drug power, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

NICCOLUM CARBONICUM.

Synonyms, Carbonate of Nickel. Nickel Carbonate.

Formula, CO_3Ni .

Preparation of Carbonate of Nickel.—Nickelore (regulus of cobaltum) reduced to a subtle powder is dissolved in moderately strong nitric acid with the aid of heat; the solution, being a little acid, is diluted with five times its quantity of water and filtered. By throwing through it hydrosulphuretted gas, arsenic and bismuthum are separated, and now caustic potash in excess is added to the solution, again filtered, for separating iron, so that by the appearing of green flakes oxide of nickel becomes cognizable. The whole liquid is now boiled for twenty to thirty minutes, and if green flakes of nickel still appear, one may be convinced that all iron is removed. The solution is now separated from the deposit by filtering, and the oxide of nickel precipitated by caustic potash, so that a little of it may remain in the solution, which after stirring and settling still appears a little green. The liquid is

boiled standing over the precipitate, and all oxide of cobalt will be again dissolved, leaving a precipitate of pure oxide of nickel. This oxide is dissolved again in pure nitric acid for preparing the carbonate; it is diluted, filtered and the oxide separated from the beautiful emerald-green solution by bicarbonate of soda. The light apple-green precipitate is well washed, dried slowly in the shade and preserved in well-stoppered bottles. It is a pale grayish-green, impalpable, nearly insipid powder.

Preparation for Homœopathic Use.—Carbonate of nickel is triturated as directed under Class VII.

NICCOLUM.

Synonyms, Niccolum Metallicum. Metallic Nickel.

Common Name, Nickel.

Symbol, Ni.

Atomic Weight, 58.8.

Origin and Preparation of Nickel.—Nickel is found in tolerable abundance in some of the metal-bearing veins of the Saxon mountains, in Westphalia, Hessia, Hungary, and Sweden, chiefly as arsenide, the *kupfernickel* of mineralogists, so called from its yellowish-red color. The word *nickel* is a term of detraction, having been applied by the old German miners to what was looked upon as a kind of false copper ore.

Nickel is easily prepared by exposing the oxalate to a high white heat, in a crucible lined with charcoal, or by reducing one of the oxides by means of hydrogen at a high temperature. It is a white, malleable metal, having a density of 8.8, a high melting-point, and a less degree of oxidability than iron, since it is but little attacked by dilute acids. Nickel is strongly magnetic, but loses this property when heated to 350° F.

Preparation for Homœopathic Use.—Nickel is triturated as directed under Class VII.

NICCOLUM SULPHURICUM.

Synonyms, Nickel Sulphate. Niccoli Sulphas.

Common Name, Sulphate of Nickel.

Formula, $\text{NiSO}_4 \cdot 7\text{H}_2\text{O}$.

Preparation of Sulphate of Nickel.—This salt is formed by dissolving carbonate of nickel in dilute sulphuric acid, concentrating the solution, and setting it aside to crystallize.

Properties and Tests.—Emerald-green prismatic crystals, efflorescent in the air, soluble in three parts of cold water, but insoluble in alcohol and ether. It has a sweet, astringent taste. The solution gives a black precipitate with yellow sulphide of ammonium, slightly soluble in excess, forming a dark brown solution, and a pale green, bulky precipitate with caustic potash.

Preparation for Homœopathic Use.—Sulphate of nickel is triturated as directed under Class VII.

NICOTINUM.

Synonyms, Nicotia. Nicotina. Nicotylia.

Common Name, Nicotin.

Formula, $C_{10}H_{14}N_2$.

Molecular Weight, 162.

Preparation.—Nicotin is the poisonous principle of tobacco, and was discovered by Possett and Reimann. It may be prepared by exhausting bruised tobacco with acidulated water, concentrating the infusion, adding an excess of potassa and distilling. According to Ortigosa (1842), the distillate is neutralized with oxalic acid, evaporated to dryness, and the residue exhausted with boiling alcohol, which dissolves oxalate of nicotia. On evaporating the solution to a syrupy consistence, and agitating it with potassa and ether, an ethereal liquid is obtained, which, on fractional distillation, yields the alkaloid.

Properties.—Nicotin is a colorless oily liquid, having at $15^{\circ}C.$ ($59^{\circ}F.$) the sp. gr. 1.027, and remaining liquid at $-10^{\circ}C.$ ($14^{\circ}F.$). It has an unpleasant, and when heated, a pungent acrid odor, a burning taste, and a strongly alkaline reaction. Exposed to air and light, it rapidly acquires a brown color, and is partly converted into a resinous compound. It boils near $250^{\circ}C.$ ($482^{\circ}F.$), but distils at a lower temperature, always leaving a residue. It dissolves readily in water, and is separated from this solution by caustic potassa. Alcohol and ether dissolve it in all proportions, and it yields with acids neutral and acid salts, of which the former crystallize with difficulty, and are mostly soluble in weak alcohol, but insoluble in ether.

Preparation for Homœopathic Use.—One part by weight of pure nicotin is dissolved in fifty parts by weight of alcohol.

Amount of drug power, $\frac{1}{100}$.

Dilutions must be prepared as directed under Class VI— β .

NIGELLA DAMASCENA, Linn.

Nat. Ord., Ranunculaceæ.

Common Names, Fennel Flower. Ragged Lady.

This is an annual plant, indigenous to Southern Europe and the Levant. It has finely divided leaves like fennel, and also a similar involucre. The fruit consists of five united follicles, which contain numerous seeds. The seeds are about $\frac{1}{16}$ of an inch long, triangular-ovate, netted-wrinkled, of a dull black color, internally white, contain a fleshy albumen inclosing a small straight embryo, and have a somewhat acrid taste. When rubbed, the seeds exhale a peculiar odor, resembling that of strawberries. They are sometimes sold as *magnolia seeds*.

Preparation.—The ripe seeds are finely powdered, and covered with five parts by weight of alcohol, and allowed to remain eight days in a well-stoppered bottle, in a dark, cool place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Amount of drug power, $\frac{1}{10}$.

Dilutions must be prepared as directed under Class IV.

NITRI SPIRITUS DULCIS.**Synonyms,** Spiritus Ætheris Nitrosi. Naphtha Nitri.**Common Name,** Sweet Spirits of Nitre.

Preparation.—The ether used in homœopathy, under the name of *nitric ether*, is not the nitric ether of the moderns, but that which is known by the name of *alcoholized nitric ether*. It is obtained by submitting to distillation a mixture of six parts of alcoholic and one of ordinary nitric acid of a specific gravity of 1.30, and rectifying the product by calcined magnesia in order to remove the free acid and a kind of yellow oil it usually contains. Ether thus obtained is kept in well-stoppered vials, care being taken to fill them completely.

Properties.—Alcoholized nitric ether is colorless, perfectly limpid, of a strong and agreeable smell, a sweetish and aromatic taste, miscible in water and alcohol in all proportions; it becomes acid in the air, and evaporates at a low temperature without leaving any residuum. That of commerce is frequently rendered impure by hydrochloric or nitric acid; in this case, by dissolving it in water, and adding some drops of a solution of silver, a precipitate will be obtained.

Preparation for Homœopathic Use.—Two parts by weight of alcoholized nitric ether is dissolved in nine parts by weight of alcohol.

Amount of drug power, $\frac{1}{16}$.Dilutions must be prepared as directed under Class VI—*a*.**NUCIS VOMICÆ CORTEX.****Bark of the Strychnos Nux Vomica, Linn.**

Preparation.—The dried bark, finely powdered, is covered with five parts by weight of alcohol, and allowed to remain eight days in a well-stoppered bottle in a dark, cool place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Amount of drug power, $\frac{1}{16}$.

Dilutions must be prepared as directed under Class IV.

NUPHAR LUTEUM, Smith.**Synonyms,** Nymphaea Lutea, Linn. Nenuphar Luteum.**Nat. Ord.,** Nymphaeaceae.**Common Name,** Small Yellow Pond Lily.

This variety is a native of Europe, and is also found at Manayunk, a suburb of Philadelphia. The earlier and submersed leaves are very thin and delicate, roundish, the floating ones oval and usually with a narrow or closed sinus. Sepals five, nearly equal; petals scarcely more than half the length of the sepals and dilated upwards; stigma twelve to sixteen-rayed; fruit globular, with a short narrow neck. The expanded flower measures about two inches across.

Preparation.—The fresh root is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, it is put into a well-stoppered bottle and allowed to stand eight days in a dark,

cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{4}$.

Dilutions must be prepared as directed under Class III.

NUX MOSCHATA.

Synonyms, *Myristica Moschata*, *Thunberg*. *Nuces Aromaticæ*. *Nux Myristica*.

Nat. Ord., Myristicaceæ.

Common Name, Nutmeg.

The nutmeg tree is about thirty feet high, with numerous branches, and an aspect somewhat resembling that of the orange tree. The leaves stand alternately on short footstalks, are oblong-oval, pointed, entire, undulated, obliquely nerved, bright green and somewhat glossy on their upper surface, whitish beneath, and of an aromatic taste. The flowers are male and female upon different trees. The former are disposed in axillary, peduncled, solitary clusters; the latter are single, solitary, and axillary; both are minute and of a pale yellowish color. The fruit, which appears on the tree mingled with the flowers, is round or oval, of the size of a small peach, smooth, at first pale green, but yellow when ripe, and marked with a longitudinal furrow. The external covering, which is at first thick and fleshy, and abounds in an austere, astringent juice, afterwards becomes dry and coriaceous, and, separating into two valves from the apex, discloses a scarlet reticulated membrane or arillus, commonly called *mace*, closely investing a thin, brown, shining shell, which contains the kernel or *nutmeg*, which is so well known that it needs no special description. Nutmegs are brought to this country either directly from the East Indies, or indirectly through England or Holland. They are also occasionally imported in small quantities from the West Indies.

Preparation.—The dried nut is finely powdered and covered with five parts by weight of alcohol, and poured into a well-stoppered bottle, where it is allowed to remain eight days, in a dark, cool place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{16}$.

Dilutions must be prepared as directed under Class IV.

NUX VOMICA.

Synonyms, *Solanum Arboreum* *Indicum Maximum*. *Strychnos Columbrina*. *Strychnos Ligustrina*.

Nat. Ord., Loganiaceæ.

Common Names, Poison Nut. Quaker Buttons.

The seeds of *Strychnos Nux Vomica*, *Linn.*

The tree has a short, thick, often crooked trunk; opposite, oval, glossy, three-to-five-nerved leaves; and small, funnel-shaped, whitish flowers, in small, terminal, paniculate cymes; the smooth, orange-colored berry is globular, about two inches in diameter, and contains

about five seeds. The tree is common in many parts of Hindostan, Farther India, and some of the East India Islands. All parts of the plant possess a bitter taste, and are probably poisonous; the bark has at one time been sold in place of *angustura* bark. The quantity of the seed imported into the United States was 460,000 pounds in 1877, and 755,000 pounds in 1878. The seed *nux vomica* is in the form of an orbicular disk, nearly an inch in diameter, and almost a quarter of an inch thick, nearly flat, or convex on one side and concave on the other, with the margin frequently thickened. The surface is of a grayish or greenish-gray color, and has a slight silky lustre from the closely appressed soft hairs, directed towards the circumference, and forming a soft ridge on the edge. Where the hairs have been rubbed off, the dull, brownish testa becomes visible. In the centre of the concave side is the hilum, connected by a slightly elevated raphe with the chalaza, which forms a small protuberance on the edge in the immediate vicinity of the radicle. Schleiden, Berg, and others regard the latter as the hilum, and the central scar as the chalaza. The thin testa incloses a yellowish-gray, somewhat translucent, horny, and very hard albumen (endospherm), which is of the same form as the seed, but has within it a large, flat, circular cavity. After softening the seed in hot water, the edge may be readily trimmed down with a knife, and the albumen split into two disks, which were united with each other merely on the margin to the width of less than one-eighth of an inch. The embryo is over one-quarter of an inch long, has a thick, club-shaped radicle, and a pair of pale greenish, delicately seven-nerved, heart-shaped cotyledons projecting into the circular cavity. The seed is inodorous, but possesses a persistently bitter taste.

Preparation.—One part of finely-pulverized seed of *nux vomica* is covered with five parts by weight of alcohol, and allowed to remain eight days in a well-stoppered bottle in a dark, cool place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Amount of drug power, $\frac{1}{16}$.

Dilutions must be prepared as directed under Class IV.

Triturations are prepared as directed under Class VII.

NYMPHÆA ODORATA, Aiton.

Synonyms, *Castalia Pudica*. *Nymphæa Alba*.

Nat Ord., *Nymphæaceæ*.

Common Names, Sweet-scented Water-Lily. Water Nymph. White Pond Lily.

This plant is found growing in ponds and still or slow-flowing water, common eastward and southward in the United States. Leaves orbicular, cordate-cleft at the base to the petiole (five to nine inches wide), the margin entire; stipules broadly triangular or almost kidney-shaped, notched at the apex, oppressed to the root-stalk; flowers white, very sweet-scented (often as much as five and one-half inches in diameter when fully expanded, opening early in the morning, closing in the afternoon); petals obtuse; aril much longer than the distinctly stipitate oblong seeds. Sepals four, green outside, nearly free. Petals numer-

ous, in many rows, the innermost gradually passing into stamens, imbricately inserted all over the surface of the ovary. Stamens indefinite, inserted on the ovary, the outer with dilated filaments. Ovary 18 to 30 celled, the concave summit tipped with a globular projection at the centre, around which are the radiate stigmas; these project at the margin, and are extended into linear and incurved sterile appendages. Fruit depressed-globular, covered with the bases of the decayed petals, maturing under water.

Preparation.—The fresh root is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having thoroughly mixed the pulp with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, and having poured it into a well-stoppered bottle, it is allowed to stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

OCIMUM CANUM, *DeCandolle*.

Synonym, (in Brazil) Alfavaca.

Nat. Ord., Labiatae.

Common Name, Hoary Basil.

This is an herbaceous plant, having an aromatic odor, with an erect and ramose stem, about 16 or 20 inches high; it is pubescent, quadrangular and grooved towards the upper branches. Leaves opposite, oval, finely indented, on petioles of the same length as the limbs of the leaves. Flowers whorled, forming terminal spikes; each whorl is provided with two foliaceous bracts. Calyx with five divisions, the upper being oval, large and entire; the other four are sharp and inferior. Corolla tubulous, inverted, with a bilabiate limb; the upper lip divided into four lobes; the lower lip composed of a single lobe, which is longer. Stamens four, with free and outward-bent filaments, and two other stamens, which are shorter and somewhat geniculate at their base; style filiform and bifid. Root vertical, fibrous, rather ramose. This plant is a native of Brazil.

Preparation.—The fresh leaves are chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having thoroughly mixed the pulp with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, it is poured into a well-stoppered bottle and allowed to stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

CENANTHE.

Synonyms, *Cenanthe Crocata*, Linn. *Cenanthe Apiifolia*.

Nat. Ord., Umbelliferae.

Common Names, Water-Hemlock. Water-Dropwort. Water Lovage. Dead Tongue.

This plant is indigenous to England, Sweden, France and Spain, growing in moist places and swamps. It is a stout, branched species, attaining three to five feet, the root-fibres forming thick, elongated tubers close to the stock; the juice, both of the stem and roots becoming yellow when exposed to the air. Leaves twice or thrice pinnate, the segments always above half an inch long, broadly crenate or rounded, and deeply cut into three or five lobes. Umbels on long terminal peduncles, with 15 to 20 rays, two inches long or more; the bracts of the involucre small and linear, several in the partial ones, few or none under the general umbel. The pedicellate flowers at the circumference of the partial umbels are mostly, but not always, barren, the central fertile ones almost sessile. Fruit somewhat corky, the ribs broad and scarcely prominent.

Preparation.—The fresh root, gathered at the time of blooming, is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having thoroughly mixed the pulp with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, it is poured into a well-stoppered bottle and allowed to stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

CENOTHERA BIENNIS, Linn.

Synonyms, *Cenothera Gauroides*. *Cenothera Parviflora*. *Onagra Biennis*. *Onosuris Acuminata*.

Nat. Ord., Onagraceae.

Common Names, Evening Primrose. Scabish. Tree Primrose.

This very variable plant is common throughout North America, in fields and waste places. It has a conical root, which is one-half to one inch thick at the base, four to six inches long, with spreading branches, externally pale brown or sometimes reddish, with a thin bark, internally white, fleshy, inodorous, of a sweetish taste, and in the second year woody and tough. The stem is from three to six inches high, rough, hairy, often purplish. The leaves are ovate-oblong or oblong-lanceolate, three to five inches long, somewhat petiolate, acute, nearly entire, and short-hairy. The flowers are in terminal leafy spikes, have a sessile cylindrical ovary, united with the long tubular calyx, four obcordate yellow petals, and eight stamens, and produce a four-valved capsule, containing numerous seeds. The herb is inodorous, and has a mucilaginous and mild, astringent taste.

Preparation.—The fresh plant, gathered when coming into flower, is chopped and pounded to a pulp and weighed. Then two parts

by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, pour it into a well-stoppered bottle, and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{4}$.

Dilutions must be prepared as directed under Class III.

OLEANDER.

Synonyms, Nerium Oleander, *Linn.* Nerium Album. Nerium Variegatum.

Nat. Ord., Apocynaceæ.

Common Name, Oleander. Rose-bay. Rose-laurel.

This well-known ornamental shrub grows wild in Southern Europe, Northern Africa and Western Asia, and thrives best in moist ground. It is from ten to fifteen feet high, often arborescent, with a gray or greenish-gray nearly smooth bark, ternately divided branches and showy dark rose-colored or white flowers. The leaves are whorled in threes, leathery, smooth, dark green and glossy above, nearly sessile, linear-lanceolate, four to six inches long, finely pointed at the apex, and have a nauseous and bitter taste. All parts of the shrub are reputed to possess poisonous properties.

Preparation.—The fresh leaves, gathered when the plant is coming into bloom, are chopped and pounded to a pulp and weighed. Then take two-thirds by weight of alcohol, add it to the pulp, stir and mix well together, and then strain *lege artis* through a piece of new linen. The tincture thus obtained is allowed to stand eight days in a well-stoppered bottle in a dark, cool place and then filtered.

Drug power of tincture, $\frac{1}{4}$.

Dilutions must be prepared as directed under Class II.

OLEUM ANIMALE ÆTHEREUM.

Synonyms, Oleum Animale Dippelii. Oleum Cornu Cervi.

Common Names, Animal Oil. Dippel's Animal Oil.

Preparation of Animal Oil.—On the dry distillation of bones and other animal substances, a fetid, brown, thick, oily liquid is obtained, known as *bone oil*, *crude*, or *fetid animal oil*. This is purified for medicinal use by distilling it in a retort or flask, which is heated by a sand-bath, as long as a thin oil passes over. This is then mixed with four times its weight of water, and rectified in a metallic still as long as the distillate is colorless, or but slightly yellow. The oily liquid is separated from the water, and at once put into small vials, well corked and preserved in a dark place. Though previously known and medicinally employed, it was first prepared from dried blood by J. C. Dippel in 1711.

Properties.—*Rectified animal oil* is a colorless or yellowish, thin, oily liquid, which has the average spec. grav. 0.80. It has a very penetrating empyreumatic and ethereal, but not a fetid, odor, and a pun-

gent, acrid, afterwards cooling and bitter taste. It has a slight alkaline reaction to test-paper, dissolves in about eighty parts of water, and is readily soluble in alcohol, ether, fixed and volatile oils. Exposed to light and air it rapidly darkens in color, and acquires a thicker consistence.

Preparation for Homœopathic Use.—Animal oil is triturated as directed under Class VIII. Or, one part by weight of animal oil is dissolved in nine parts by weight of alcohol.

Amount of drug power, $\frac{1}{16}$.

Dilutions must be prepared as directed under Class VI—*a*.

OLEUM CAJUPUTI.

Synonym, Cajuputum.

Nat. Ord., Myrtaceæ.

Common Names, Oil of Cajeput. Kayu-puti (white wood).

The volatile oil is obtained from the leaves of *Melaleuca Cajeputi*, *Roxburgh* (s. M. Minor, *Smith*).

Origin.—The species mentioned is a small tree, which has lanceolate entire leaves and terminal spikes of small white flowers with exerted stamens. It is indigenous to the East Indian Islands. Bentham regards it as a mere variety of *M. Leucadendron*, *Linn.*, which extends into Further India, the Phillippines, and a considerable portion of Australia, and often attains a moderately large size. The oil is prepared in Celebes, Bouro, and other islands of the Melucca Sea, by distilling the leaves with water.

Properties.—Oil of cajeput is limpid, of a green color, a penetrating odor, suggesting that of camphor, rosemary and mint, and a warm, camphoraceous, afterwards cooling taste. The specific gravity varies between .914 and .930; its boiling point is near 173° C. (343.4° F.). It does not congeal at -25° C. (-13° F.), is freely soluble in alcohol, and does not affect litmus paper. It dissolves iodine quietly, or with the evolution of a few reddish vapors; ammonia turns it yellowish, and sulphuric acid colors it brown, reddish, and finally purplish-brown. By rectification it becomes colorless.

Preparation for Homœopathic Use.—One part by weight of oil of cajeput is dissolved in fifty parts by weight of strong (95 per cent.) alcohol.

Amount of drug power, $\frac{1}{16}$.

Dilutions must be prepared as directed under Class VI—*β*.

OLEUM JECORIS ASELLI.

Synonyms, Oleum Morrhue. Oleum Hepatis Morrhue.

Class, Pisces.

Order, Teleostia.

Family, Gadida.

Common Names, Cod-Liver Oil. Cod Oil.

The fixed oil obtained from the liver of *Gadus Morrhua*, and of other species of *Gadus*.

Origin.—The *common cod*, formerly called *asellus major*, inhabits the Northern Atlantic, and is frequently met with on the North American coast, on and near the banks of Newfoundland, where it seems the *hake*, *G. merluccius*, *pollack*, *G. pollachius*, and *haddock*, *G. æglinus*, are likewise used to some extent for the same purpose. On the Norwegian coast, according to De Jongh (1843), cod-liver oil is mainly produced from the *dorse*, *G. callarias*, but also from the coal-fish, *G. carbonarius* and the *pollack*.

Preparation.—On the coast of Norway the carefully cleaned livers are placed in baskets or barrels, exposed to a sunny place, where the oil slowly exudes, and is removed and filtered; or the livers are slowly heated in a steam or water-bath, or sometimes boiled with water, the oil being skimmed off from the surface. On the coast of North America cod-liver oil is now generally more carefully prepared. The introduction of ice as a means of preserving has developed the business of transporting cod-fish fresh to the inland cities during the catching season, from December to March; and likewise that of the proper preparation of cod-liver oil from fresh livers on shore by means of gradually applied steam-heat, whereby the oil is separated from the tissues, the watery portion subsiding, the oil being afterwards filtered and kept in dry vessels in a cool place.

Properties.—The purest cod-liver oil is of a pale yellow color, and faint acid reaction; but if prepared at a high temperature, or if the livers are allowed to more or less putrefy, it has a more decided reaction and a pale or darker reddish-brown color, the darkest varieties being transparent only in thin layers, and having a repulsive fishy odor, and a bitterish acrid taste. The acidity and fishy smell are less marked in the light brown oil, and still less in the yellow or white oil, which is nearly bland. At 15° C. (59° F.) the sp. gr. of light cod-liver oil is .92 to .925, of the dark colored about .930. Cold alcohol dissolves not over 2.5 per cent. from the yellow, but about 6 per cent. from dark brown cod-liver oil. At a low temperature a granular crystalline deposit is separated, in largest proportion from the darker colored oil. On the addition of sulphuric acid a violet color soon changing to brown-red is produced, due to the presence of biliary compounds; nitric acid colors it purple, afterwards violet and brown.

Preparation for Homœopathic Use.—Cod-liver oil is triturated, as directed under Class VIII.

OLEUM LIGI SANTALI.

Synonyms, Oleum Santalum Album. Oleum Santalum Citrinum.

Nat. Ord., Santalaceæ.

Common Name, Oil of Sandal-Wood.

The oil obtained from the wood of Santalum Album, Linn.

Origin.—The white sandal is a small tree, indigenous to Southern India and some of the East Indian Islands, and cultivated in other parts of tropical Asia. The leaves of white sandal are opposite, and vary in shape between oval and lanceolate, and are smooth and glau-

cous beneath. The flowers are small, numerous, in paniculate cymes, very variable in color and without odor. In India the trees are felled or dug up where the trunk is about a foot in diameter, the branches are cut off and the trunk is left on the ground until the sap-wood has been mostly eaten away by ants, when it is trimmed, the heart-wood alone being used. The most important principle of sandal-wood is the volatile oil, which is stated to be obtainable in the proportion varying between one and four per cent.

Properties of Oil of Sandal-Wood.—It is a yellowish liquid, having an agreeable aromatic, somewhat roseate odor, and an aromatic, bitterish, and slightly acrid taste. Its density is about 0.96, and it commences to boil near 215° C. (419° F.). It is readily soluble in 80 per cent. alcohol, but it appears from Dragendorff's observations (1876) that old oil is less soluble than that which has been recently distilled.

Preparation for Homœopathic Use.—One part by weight of oil of sandal-wood is dissolved in fifty parts by weight of alcohol.

Amount of drug power, $\frac{1}{100}$.

Dilutions must be prepared as directed under Class VI— β .

Triturations are prepared as directed under Class VIII.

OLEUM RICINI.

Synonyms, Oleum Palmæ Christi. Ricinus Communis. Ricinus Lævis. Ricinus Viridis.

Nat. Ord., Euphorbiaceæ.

Common Name, Castor Oil.

The fixed oil obtained from the seeds of Ricinus Communis, *Linn.*

Preparation of Castor Oil.—Nearly all the castor oil which is at the present time consumed in the United States is manufactured from seeds grown in the country. While in the year ending June 30, 1867, the importation of castor oil was 82,800 gallons, and of the seeds 60,588 bushels, the quantities imported in 1878, were 422 gallons and 106,528 pounds respectively. The seeds, after having been crushed and freed from the integuments, or without removing the latter, are kiln-dried and subjected to powerful pressure. The oil thus obtained is heated with water, to remove albuminous matters, and when clear, drawn off into barrels or other suitable vessels. More oil, but of inferior quality, is obtained by again expressing the marc, and using a higher temperature and greater power. The other method of obtaining the oil by boiling the seeds with water and skimming it from the surface has probably been abandoned in most countries. L. Boerner (1876) extracted from the presscake with ether, 14 per cent. of oil having a light yellow color, while alcohol dissolved 21 per cent. of dark oily matter.

Purification.—Cold-pressed castor oil is nearly transparent and requires no further purification. If opaque, the oil is filtered, either through paper or felt, or, as recommended by Pavesi (1857) is previously treated for several days with one per cent. of magnesia, and 2.5 per cent. of purified animal charcoal, which treatment renders it nearly colorless and inodorous.

Properties.—Castor oil is viscid, transparent or nearly so, almost colorless or pale greenish-yellow, of a faint, mild odor, and a bland, slightly acrid taste. Its sp. gr. is about 0.96. At a low temperature it becomes thicker, and usually deposits white granules of solid fat; near -18° C. (near 0° F.) it congeals to a yellowish mass. It is only partly soluble in petroleum benzin, but is soluble in all proportions in absolute alcohol, ether, and glacial acetic acid, and at 15° C. (59° F.) in about four parts of alcohol, sp. gr. 0.835. When exposed to the atmosphere in thin layers, it slowly dries to a transparent varnish. Polarized light is by some samples turned to the right, by others to the left. It commences to boil at about 265° C. (509° F.), and yields an oily distillate; at a higher temperature it becomes black. Heated with dilute nitric acid, or with potassium bichromate and sulphuric acid, *ænanthyllic acid*, $C_7 H_{14} O_2$, having an agreeable aromatic odor, is obtained.

Preparation for Homœopathic Use.—One part by weight of castor oil is dissolved in fifty parts by weight of alcohol.

Amount of drug power, $\frac{1}{100}$.

Dilutions must be prepared as directed under Class VI— β .

ONISCUS ASELLUS.

Class, Insecta.

Order, Crustacea.

Family, Oniscidæ Isopoda.

Common Names, Common Wood-louse. Sow-Bug.

This little animal is from three to six lines long; it has fourteen feet, four antennæ, of which two are short, and almost entirely concealed; the others cetaceous, bent, having five or six joints; its body is oval, covered with many crustaceous pieces, transverse, sub-imbricated, and provided at the extremity with two short and very simple appendages. The color is gray, more or less deep, verging on the blue or brown, with yellowish streaks or spots. The oniscus is found in cellars, under stones, in humid places, and seems to shun the light; when touched, it rolls up in a heap; the taste is sweetish, nauseous; the odor disagreeable, ammoniacal. The *oniscus asellus* should not be confounded with the *oniscus armadillo*, Linn., which has several feet and no bifid tail.

Preparation.—The live animals are crushed, and covered with five parts by weight of alcohol, and allowed to remain eight days, in a well-stoppered bottle, in a dark, cool place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{10}$.

Dilutions must be prepared as directed under Class IV.

OLIBANUM.

Nat. Ord., Burseraceæ.

Common Names, Gum Olibanum. Frankincense.

From *Boswellia Carterii* and other species of *Boswellia*.

Origin.—The genus *Boswellia* is confined to India, Southern Arabia,

and Eastern Africa. It comprises trees with impari-pinnate leaves, serrate leaflets, small, racemose, decandrous flowers, and three-celled drupaceous capsules containing three seeds. The different species are still imperfectly known. *B. Carterii* may possibly be a polymorphous species, or several forms at present regarded as mere varieties may be distinct species, which grow only in two limited districts in Southeastern Arabia and in the Somali country of Eastern Africa.

Collection.—The collection of olibanum in the Somali country was described by Cruttenden (1846), and in Arabia by Carter (1847), who had visited these countries three years previously. Deep incisions are made from which a milk-white exudation flows, which gradually hardens, and is then collected. Olibanum enters commerce by way of Bombay.

Description.—Olibanum consists of roundish, oblong, or irregular-shaped separate tears. These vary in diameter between one-eighth and one-half inch or more, and are nearly colorless, pale yellowish, or of a reddish hue, and covered with a whitish powder, resulting from the attrition of the pieces. When broken they exhibit a flat scarcely conchoidal fracture and a waxy lustre. Olibanum has a balsamic somewhat terebinthinate odor, softens between the teeth, and has a balsamic and slightly bitter taste. Triturated with water, it yields a white emulsion; alcohol dissolves the greater part of it. When heated, it becomes soft and burns, diffusing an aromatic odor.

Preparation for Homœopathic Use.—Pure olibanum is triturated as directed under Class VII.

ONONIS SPINOSA, Linn.

Synonyms, *Remora Alopecuroides*. *Remora Aratum*. *Remora Urinaria*. *Resta Bovis*.

Nat. Ord., Leguminosæ.

Common Name, Common Rest-harrow.

This perennial vegetable is found all over Europe, where it grows in uncultivated fields, dry pasturages, along roads, hedges, etc. The root is as thick as the finger, branchy, dipping into the ground two feet or more, of a reddish-brown externally, and whitish internally, of a sweetish-slimy and somewhat acrid-bitter taste; stem recumbent below, erect above, round, ligneous, branchy, spiny; leaves petiolate, sparse, ovoid, serrated, hairy on both sides, the lower ternate, the upper single; flowers solitary, axillary, with short peduncles, of a pale purplish color or with rosy veins.

Preparation.—The fresh plant, gathered when beginning to flower, is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, pour it into a well-stoppered bottle and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{4}$.

Dilutions must be prepared as directed under Class III.

OPIUM.

Synonyms, *Papaver Somniferum.* *Papava Hortense.* *Succus Thebaicus.*

Nat. Ord., *Papaveraceæ.*

Common Names, *Opium.* *White Poppy.* *Laudanum.*

The white poppy is an annual plant, with a round, smooth, erect, glaucous, often branching stem, rising two or three feet in height, and sometimes attaining five or even six feet in favorable situations. The leaves are large, variously lobed and toothed, and alternately disposed upon the stem, which they closely embrace; flowers terminal, very large, and of a white or silver-gray color, with a tinge of violet at the base; calyx smooth, two-leaved, which fall when the petals expand; these are usually four in number; the ovary, which is smooth and globular, supports a radiated stigma, and is surrounded by numerous short and slender filaments, with erect, oblong, compressed anthers; the capsule is smooth and glaucous, of a rounded shape, from two to four inches in diameter, somewhat flattened at top and bottom, and crowned with the persistent stigma, the diverging segments of which are arranged in a circle upon the summit; it contains numerous minute white seeds, which, when perfectly ripe, escape through small openings beneath the stigma; all parts of the poppy are said to contain a white, opaque, narcotic juice; it most abounds in the capsule, and there the virtues of the plant most reside. Opium is the dried juice of these capsules, and comes to us in brown cakes of a greasy, shining appearance and bitter taste, acrid and narcotic, and of a strong odor, which becomes weaker when older. Though generally believed to be a native of Asia, this species of poppy grows wild in the south of Europe, and even in England, whither its seeds are supposed to have been brought at a very early period. It was cultivated by the ancient Greeks, and is mentioned by Homer as a garden plant. It is at present cultivated very extensively in India, Persia, Egypt, and Asiatic Turkey, for opium. The black opium from Smyrna is the strongest, and is the kind used for homœopathic preparations.

Preparation.—The gum opium dried and powdered, is covered with five parts by weight of dilute alcohol, and allowed to remain eight days in a well-stoppered bottle, in a dark, cool place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{16}$.

Dilutions must be prepared as directed under Class IV, except that dilute alcohol must be used for the 2x and 1 dilutions.

Triturations are prepared according to Class VII.

OPOPANAX.

Synonyms, *Opopanax Chironium,* *Koch.* *Pastinaca Opopanax,* *Linn.*

Nat. Ord., *Umbelliferæ.*

Common Name, *Rough Parsnip.*

This species of parsnip has a thick, yellow, fleshy, perennial root, which sends up annually a strong branching stem, rough near the base, about as thick as a man's thumb, and from four to eight feet in height. The leaves are variously pinnate, with long sheathing petioles, and large, oblong, serrate leaflets, of which the terminal one is cordate, others are deficient at their base upon the upper side, and the whole are hairy on their under surface. The flowers are small, yellow, and form large flat umbels at the termination of the branches. The plant is a native of the Levant, and grows wild in the south of France, Italy Greece. When the base of the stem is wounded, a juice exudes, which, when dried in the sun, constitutes the opopanax of commerce. It is sometimes in tears, but usually in irregular lumps or fragments, of a reddish-yellow color, speckled with white on the outside, pale within, and, when broken, exhibiting white pieces intermingled with the mass. Its odor is strong, peculiar, and unpleasant; its taste bitter and acrid.

Preparation.—The gum-resin is finely powdered and covered with five parts by weight of alcohol, and allowed to remain eight days in a well-stoppered bottle in a dark, cool place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{16}$.

Dilutions must be prepared as directed under Class IV.

OPUNTIA VULGARIS, *Miller*.

Synonyms, *Cactus Opuntia*, *Linn.* *Opuntia Humifusa*.

Nat. Ord., Cactaceæ.

Common Names, Prickly Pear. Indian Fig.

This is a low, prostrate or spreading plant, pale, with flat and broadly obovate joints; the minute leaves ovate-subulate and appressed; the axils bristly, rarely with a few small spines; flowers sulphur-yellow, opening in sunshine for more than one day; berry nearly smooth, pulpy, eatable. It is found growing in sandy fields and rocky places, from Nantucket, Massachusetts, southward, usually near the coast. Its flowers appear in June.

Preparation.—The fresh twigs and flowers are chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, pour it into a well-stoppered bottle and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

OREOSELINUM.

Synonyms, *Athamanta Oreoselinum*, *Linn.* *Peucedanum Oreoselinum*. *Apium Montanum*.

Nat. Ord., Umbelliferae.

Common Names, Mountain-Parsley. Speedwell. Galbanum.

This plant, occurring on loose meadows, hills and slopes nearly over all Europe, has a perennial root, almost simple, yellowish-gray, furnished with a cluster of brown fibres. Stem erect, with fine furrows, glabrous, not very branchy, from one to two feet high. Radical leaves petioled, large, tripinnate; leaflets oval, deeply indented, glabrous; the teeth terminate in white points. Corymbs terminal. Involucrum consists of a number of lanceolate, revolute leaflets. Petals white. The ripe fruit is almost round, flat, with a broad border of a pale yellow. The whole plant has an agreeable aromatic smell and taste, nearly related to common parsley.

Preparation.—The fresh plant, gathered shortly before it begins to flower, is chopped and pounded to a pulp and pressed out *lege artis* in a piece of new linen. The expressed juice is then, by brisk agitation, mingled with an equal part by weight of alcohol. This mixture is allowed to stand eight days in a well-stoppered bottle in a dark, cool place and then filtered.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class I.

ORIGANUM VULGARE, Linn.

Nat. Ord., Labiatae.

Common Names, Common Marjoram. Mountain Mint. Organg.

This is a perennial herb, with erect, purplish, downy, four-sided, trichotomous stems, about eighteen inches high, and opposite, ovate, entire, somewhat hairy leaves, of a deep yellowish-green color. The flowers are of a pinkish-purple or rose color, disposed in roundish, paniced spikes, and accompanied with ovate reddish bracts, longer than the calyx. This is tubular and five-toothed, with nearly equal segments. The corolla is funnel-shaped, with the upper lip erect, bifid, and obtuse, the lower trifid, blunt and spreading. The anthers are double, the stigma bifid and reflexed. The plant is a native of Europe and America. In this country it grows along the roadsides, and in dry stony fields and woods from Pennsylvania and Virginia, and is in flower from June to October. It has a peculiar, agreeable aromatic odor, and a warm, pungent taste.

Preparation.—The fresh herb, in flower, is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, pour it into a well-stoppered bottle and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

OROBANCHE VIRGINIANA, Linn.

Synonyms, *Epiphegus Americanus, Nuttall.*

Nat. Ord., *Orobanchææ.*

Common Names, Beech-drop. Broom Rape. Cancer Root. Squaw Root.

This is a parasitic, fleshy plant, with a tuberous, scaly root, and a smooth stem, branched from the base, from twelve to eighteen inches high, furnished with small ovate scales, of a yellowish or purplish color, and wholly destitute of verdure. It is found in all parts of North America, growing upon the roots of the beech tree, from which it obtained its popular name. It is in some places very abundant. The plant has a bitter, nauseous, astringent taste, which is diminished by drying.

Preparation.—The fresh plant is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, pour it into a well-stoppered bottle and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

OSMIUM.

Symbol, Os.

Atomic Weight, 199.

Origin and Preparation of Osmium.—The separation of this metal from iridium, ruthenium, and the other metals with which it is associated in native osmiridium, and in platinum residues, depends chiefly on its ready oxidation with nitric or nitro-muriatic acid, or by ignition in air or oxygen, and the volatility of the oxide thus produced. To prepare metallic osmium, the solution obtained by condensing the vapor of osmium tetroxide in potash is mixed with excess of hydrochloric acid, and digested with mercury in a well-closed bottle at 40° C. (104° F.). The osmium is then reduced by the mercury, and an amalgam is formed, which, when distilled in a stream of hydrogen till all the mercury and calomel are expelled, leaves metallic osmium in the form of a black powder (Berzelius). The metal may also be obtained by igniting ammonium chloro-osmite with sal-ammoniac.

Properties.—The properties of osmium vary according to its mode of preparation. In the pulverulent state it is black, destitute of metallic lustre, which, however, it acquires by burnishing; in the compact state, as obtained by Berzelius' method above described, it exhibits metallic lustre, and has a density of 10. Deville and Debray, by igniting precipitated osmium sulphide in a crucible of gas-coke, at the melting heat of nickel, obtained it in bluish-black, easily divisible lumps. When heated to the melting point of rhodium, it becomes more compact, and acquires a density of 21.3 to 21.4. At a still higher temperature, capable of melting ruthenium and iridium, and volatiliz-

ing platinum, osmium likewise volatilizes, but still does not melt; in fact, it is the most refractory of all metals.

Osmium in the finely divided state is highly combustible, continuing to burn when set on fire, till it is all volatilized as tetroxide. In this state also it is easily oxidized by nitric or nitro-muriatic acid, being converted into tetroxide. But after exposure to a red heat, it becomes less combustible, and is not oxidized by nitric or nitro-muriatic acid. Osmium which has been heated to the melting-point of rhodium, does not give off any vapor of tetroxide when heated in the air to the melting point of zinc, but takes fire at higher temperatures.

Preparation for Homœopathic Use.—Osmium is triturated as directed under Class VII.

OSTRYA VIRGINICA, Willd.

Nat. Ord., Cupuliferae.

Common Names, Hop-Hornbeam. Iron Wood. Lever Wood.

This is an indigenous slender tree, with very hard wood, brownish furrowed bark, and foliage resembling that of birch. Leaves are oblong-ovate, taper-pointed, very sharply doubly serrate, downy beneath, with eleven to fifteen principal veins; buds acute; involucrel sacs bristly-hairy at the base. Sterile flowers in drooping cylindrical catkins, consisting of several stamens in the axil of each bract; filaments short, often forked, or irregularly united, bearing one-celled (half) anthers; their tips hairy. Fertile flowers in short catkins; a pair under each deciduous bract, each of an incompletely two-celled two-ovuled ovary, crowned with the short bearded border of the adherent calyx, tipped with two long-linear stigmas, and enclosed in a tubular bractlet, which in fruit becomes a closed bladdery oblong bag, very much larger than the small and smooth nut; these inflated involucrel loosely imbricated to form a sort of strobile, in appearance like that of the hop. The flowers appear in spring with the leaves. Hop-like fruit fullgrown in August. The tree is very common, growing in rich woods.

Preparation.—The wood, in moderately fine powder, is covered with five parts by weight of alcohol, and allowed to remain eight days in a well-stoppered bottle, in a dark, cool place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{16}$.

Dilutions must be prepared as directed under Class IV.

PÆONIA OFFICINALIS, Linn.

Synonym, Rosa Benedicta.

Nat. Ord., Ranunculaceae.

Common Name, Peony.

Peony is a perennial herb from Southern Europe, which is frequently cultivated for ornament. It has an oblique, many-headed root-stock, six or nine inches in length, with numerous, at first fibrous, roots, which afterwards enlarge and become fusiform, dark brown, internally white

and mealy, resembling elongated tubers. The branched stem is about two feet high, smooth, with large, twice or thrice pinnately dissected and cleft green smooth leaves, and large terminal flowers, having five sepals, five to eight petals, numerous stamens, and two to three ovaries. The petals are obovate, entire or crenate, one and a half inch long, dark red, purple or rose-red. The seeds are nearly globular, one-eighth to one-sixth of an inch in diameter, black, glossy, and smooth, inodorous, and contain a yellowish oily albumen and a small embryo.

Preparation.—The fresh root, gathered in spring, is chopped and pounded to a pulp, and pressed out *lege artis* in a piece of new linen. The expressed juice is then, by brisk agitation, mingled with an equal part by weight of alcohol. This mixture is allowed to stand eight days in a well-stoppered bottle, in a dark, cool place, and filtered.

Amount of drug power, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class I.

PALLADIUM.

Symbol, Pd.

Atomic Weight, 106.5.

Preparation of Palladium.—When the solution of crude platinum, from which the greater part of that metal has been precipitated by sal-ammoniac, is neutralized by sodium carbonate, and mixed with a solution of mercuric cyanide, palladium cyanide separates as a whitish, insoluble substance, which, on being washed, dried, and heated to redness, yields metallic palladium in a spongy state. The palladium may then be welded into a mass, in the same manner as platinum.

Properties.—Palladium closely resembles platinum in color and appearance; it is also very malleable and ductile. Its density differs very much from that of platinum, being only 11.8. Palladium is more oxidable than platinum. When heated to redness in the air, especially in the state of sponge, it acquires a blue or purple superficial film of oxide, which is again reduced at a white heat. This metal is slowly attacked by nitric acid; its best solvent is nitro-muriatic acid.

Preparation for Homœopathic Use.—Palladium is triturated as directed under Class VII.

PANACEA ARVENSIS.

Common Name, Poorman's Mercury.

This is a tree exceedingly common in Brazil, where it is known as *azougue dos pobres* (mercury of the poor), *cabedula* and *erva carneira*.

Preparation.—The fresh leaves are chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, pour it into a well-stoppered bottle, and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Amount of drug power, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

PANCREATINUM.

Synonym, Pancreatin.

Origin.—The *pancreas* is a gland which is deeply seated in the abdomen, and secretes the *pancreatic juice*, containing the proteid *pancreatin*, to which it owes the property of emulsifying and decomposing fats into glycerin and acid, and of converting starch into sugar. The pancreatic juice is a colorless, clear, somewhat viscid liquid, of an alkaline reaction, and without odor and taste; it contains, besides the ferment, nearly one per cent. of mineral salts, a trace of fat and of organic matters soluble in water.

Preparation.—Prof. Scheffer (1875) recommended the following process: Fresh and finely chopped beef pancreas is macerated for a day in water acidulated with a little hydrochloric acid; the maceration is repeated with water, the strained liquids filtered, neutralized with calcium carbonate, again filtered, and mixed with an equal volume of 95 per cent. alcohol; the precipitate is washed with dilute alcohol, pressed between bibulous paper, and dried at the ordinary temperature.

Properties.—Thus prepared it is a transparent, brittle, yellow mass, which dissolves in water slowly, but almost entirely, leaving, when prepared in cold weather, only a trace of insoluble matter. The solution is clear, pale yellowish, neutral, and produces white precipitates on heating and on being mixed with alcohol. Hydrochloric acid likewise precipitates it, but not a saturated neutral solution of table salt.

Preparation.—Pure pancreatin is triturated, as directed under Class VII.

PARAFFIN.

Synonym, Paraffinum.

Origin.—The paraffins are produced under various circumstances from fats and other organic compounds, but are chiefly obtained among the products resulting from the destructive distillation of many organic substances, especially cannel and boghead coal. They are a natural constituent in varying proportions of the different kinds of petroleum, and solid paraffins are found native in Austria, Great Britain, the United States (Utah), and some other countries, constituting the minerals known as *earth-wax*, *fossil (mineral) wax*, and *ozokerite*.

Properties.—The general formula of the paraffins is the same as that of the lighter coal oils, $C_n H_{2n+2}$; but in their physical properties they differ from the latter in being at the ordinary temperature either solid, and frequently crystalline, or of an oleaginous consistence and liquid. Those which are liquid at the ordinary temperature are known in commerce as *paraffin oils*, while the name *paraffin* is retained for the solid products. They can be separated from one another only with great difficulty; but it is known that the different members of this homologous series increase in density, viscosity, and in boiling point, and the solid paraffins also in melting point and hardness, as the

molecular weight increases. The solubility of paraffins in benzol decreases as the melting point rises. Paraffin is insoluble in water, alkalis and cold alcohols, but dissolves in volatile and fixed oils, ether, chloroform, benzol and carbon bisulphide; the solubility is, however, influenced by the composition.

Preparation for Homœopathic Use.—Paraffin is triturated, as directed under Class VII.

PAIREIRA BRAVA.

Synonym, *Cissampelos Pareira*, *Linn.*

Nat. Ord., Menispermaceæ.

Common Name, Pareira Brava.

This is a climbing plant, with numerous slender, shrubby stems, and roundish, entire leaves, indented at the top, covered with soft hair upon their under surface, and supported upon downy footstalks, inserted into the back of the leaf. The flowers are very small and disposed in racemes, of which those in the female plant are longer than the leaves. The plant is native of the West Indies and South America. The root comes to market in pieces from the thickness of the finger to that of the arm, from a few inches to two or more feet in length, sometimes as much as eight inches or more in thickness, cylindrical, occasionally contorted or forked, and covered with a thin, firmly adhering, grayish-brown, or very dark colored bark. The outer surface is marked with longitudinal and annular wrinkles, and sometimes, in the larger pieces, with knotty excrescences. The interior is ligneous, yellowish, very porous, marked by irregular concentric circles, inodorous and of a sweetish, nauseous, bitter taste.

Preparation.—The carefully dried root, finely powdered, is covered with five parts by weight of alcohol, and allowed to stand eight days in a well-stoppered bottle, in a dark, cool place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{10}$.

Dilutions must be prepared as directed under Class IV.

PARIS QUADRIFOLIA, *Linn.*

Synonyms, *Aconitum Pardalianches*. *Herba Paris*. *Solanum Quadrifolium Bacciferum*. *Ura Lupulina*.

Nat. Ord., Smilacæ.

Common Names, Fox Grape. *Herb Paris*. *True Love*.

This plant grows all over Europe, in wet woods, thickets, in plains as well as on mountains. The root is perennial, vertical, rampant, rounded, jointed, fleshy, whitish. Stem erect, single, round, unifloral, a foot high, herbaceous; leaves at the top of the stem, with short peduncles, broad-elliptical or oval, pointed, entire, glabrous, disposed as a cross, shining beneath, veined, with sharp edges and three or four nerves; calyx four-leaved, of a greenish-yellow; peduncles from one to two inches long, and furrowed; flower of a yellowish-green; berry dark blue, shining, slightly quadrangular. The fresh leaves and ber-

ries have a disagreeable and narcotic odor; the root has a pungent odor and a nauseous taste.

Preparation—The entire fresh plant, gathered at the time of ripening of the berries, is chopped and pounded to a pulp and pressed out *lege artis* in a piece of new linen. The expressed juice is then, by brisk agitation, mingled with an equal part by weight of alcohol. This mixture is allowed to stand eight days in a well-stoppered bottle, in a dark, cool place, and then filtered.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class I.

PASSIFLORA INCARNATA, *Linn.*

Nat. Ord., Passifloraceæ.

Common Names, May Pop. Passion-Flower.

This is a perennial herb, found growing in dry soils, in Virginia, Kentucky and southward. Its stem is nearly smooth; leaves three-cleft; the lobes serrate; petiole bearing two glands; flowers large, two inches across, nearly white, with a triple purple and flesh-colored crown; involucre three-leaved. Calyx of five sepals united at the base into a short cup, imbricated in the bud, usually colored like the petals, at least within; the throat crowned with a double or triple fringe. Petals five on the throat of the calyx. Stamens five; filaments united in a tube which sheathes the long stalk of the ovary, separate above; anthers large, fixed by the middle. The flowers appear from May to July. The fruit is of the size of a hen's egg, oval, called *Maypop*.

Preparation.—The fresh leaves, gathered in May, are chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, pour it into a well-stoppered bottle and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

PAULLINIA PINNATI.

Synonym, Paullinia Timbo.

Nat. Ord., Sapindaceæ.

Common Names, (in Brazil) Guaratimbo. Timbo-Sipo.

This beautiful liana is commonly found in the woods of Brazil; its stem, of a flexible and tenacious wood, furnishes slender, slightly pubescent branches with deep parallel furrows. The leaves are alternate, with winged petioles; they are composed of five folioles which are almost sessile, oval-lanceolate, crenulate, irregularly bisugate. The flowers are small, in spikes, situated on axes that are accompanied by leaflets arising from the axillæ of the leaves. Calyx with five folioles, corolla with four petals, alternating with the folioles of the calyx; eight stamens; ovary with three uni-ovulate chambers. Capsule pear-shaped

and sharp, divided at its superior part in three tubercles. Root with long fasciculate branches which are a little hairy at their extremity.

Preparation.—The fresh root is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, pour it into a well-stoppered bottle and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Amount of drug power, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

PEDICULUS CAPITIS.

Common Name, Head Louse. **Common Louse.**

It is scarcely necessary to give a description of this species which is sufficiently known; we shall content ourselves with indicating the principal characteristics which distinguish it from the other vermin living on the surface of the human body. The louse is of an oval form; flattened, longer than the crab-louse; its head is very small; its thorax is composed of three not very distinct rings; the abdomen is all of one piece, rounded off on the sides; it is ash-colored, whereas the crab-louse is entirely white. The lice that have been made use of in provings, were taken from the head of a healthy child of five years.

Preparation.—The live animal is triturated as directed under Class IX.

PENTHORUM SEDOIDES, Linn.

Nat. Ord., Crassulaceæ.

Common Name, Virginia Stone-Crop.

This is a hardy plant of little beauty, found growing in moist situations, in Canada and the United States. Its stem is from ten to sixteen inches high, with a few short branches; leaves alternate, two to three inches long, by one-half to one inch broad, membranous, smooth, sharply and unequally serrate, nearly sessile, lanceolate, acute at each end; racemes several, recurved at first, at length spreading, with the flowers arranged on their upper side, constituting a corymbose, scentless, pale yellowish-green cyme; petals generally wanting. Flowers appear from July to September.

Preparation.—The fresh plant is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, pour into a well-stoppered bottle and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Amount of drug power, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

PEPSIN.

A preparation of the mucous lining of a fresh and healthy stomach of the pig, sheep, or calf.

Preparation of Pepsin.—The stomach of one of these animals recently killed having been cut open and laid on a board with the inner surface upwards, any adhering portions of food, dirt, or other impurity are to be removed, and the exposed surface slightly washed with cold water; the cleansed mucous membrane is then to be scraped with a blunt knife or other suitable instrument, and the viscid pulp thus obtained is to be immediately spread over the surface of glass or glazed earthenware and quickly dried at a temperature of not exceeding 100° F. The dried residue is to be reduced to powder and preserved in a stoppered bottle.

This product, it will be observed, consists merely of the carefully dried mucous membrane of the stomach. A process for obtaining the digestive principle in a nearly pure state was published by Prof. E. Scheffer (1872), and is as follows: The mucous membrane of the well-cleaned fresh stomach of the hog is dissected off, chopped finely, and macerated in water acidulated with hydrochloric acid. After several days the liquid is strained, clarified by rest and decantation, and mixed with an equal bulk of saturated solution of sodium chloride. The pepsin is separated floating upon the surface, drained upon muslin, and strongly pressed to remove the solution of salt. If permitted to dry, it becomes very tough, parchment-like, or leathery. Obtained in this way, it still contains mucus, phosphate of calcium, and table-salt; from the two former of which it is freed by resolution in water, filtering, again precipitating by sodium chloride, and expressing; the table-salt which now remains with it is best removed by allowing the pressed pepsin to dry, when the salt will effloresce upon the surface and will dissolve on short immersion in water. It then constitutes Scheffer's *purified pepsin*, which dissolves in acidulated water to a clear and colorless solution.

To obtain *saccharated pepsin*, the expressed residue, while still damp, is thoroughly mixed with milk-sugar, and when the mixture has become air-dry, its digestive power is ascertained, and the remainder is then diluted by the addition of milk-sugar, so that ten grains of it will dissolve 120 grains of coagulated albumen at a temperature of 100° F. in five or six hours.

Various other processes for obtaining pepsin have been recommended, but the saccharated pepsin, prepared as above, is most generally employed in the United States, in preference to pepsin reduced to powder by the aid of starch, which has, at least sometimes, been found to be very deficient in digestive power.

Properties.—Purified pepsin is a light yellowish-brown powder, having a faint but not disagreeable odor, and a slightly saline taste without any indication of putrescence. It is soluble to a very small degree in water or spirit. One-half of it, in acidulated water, was observed by Scheffer to dissolve over 1,500 grains of coagulated albumen in a few days. Pepsin, particularly after it has been slightly

acidulated, coagulates milk; 80,000 parts of the latter were found by Scheffer to be curdled by one part of purified pepsin.

Preparation for Homœopathic Use.—Purified pepsin is triturated as directed under Class VII.

PETIVERIA TETRANDRA, *Gom.*

Synonym, *Petiveria Mappa Graveolens.*

Nat. Ord., *Phytolacææ.*

Common Names, (in Brazil) *Pipi.* *Erva de Pipi.*

This bush is common in the fields around Rio Janeiro, where it blossoms the whole year. Its branches are erect, somewhat sarmentose, slightly pubescent at their extremities, with alternate, glabrous, somewhat undulate leaves. Flowers small, scattered over long axillary or terminal spikes; perianth persistent, herbaceous, with four linear divisions. Stamens four, alternate with the divisions of the perianth, and a little taller. A single ovary, surmounted by a style, divided into ten reflexed stigmata. Capsule flattened, containing a single seed. The roots are branching and very fibrous; they smell strongly of garlic.

Preparation.—The recently dried root is powdered and covered with five parts by weight of alcohol. Having poured it into a well-stoppered bottle, it is allowed to remain eight days at a moderate temperature in a dark place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{10}$.

Dilutions must be prepared as directed under Class IV.

PETROLEUM.

Synonyms, *Oleum Petræ.* *Oleum Terræ.* *Bitumen Liquidum.* *Naphtha Montana.*

Common Names, *Coal Oil.* *Rock Oil.*

The name petroleum is employed so loosely to designate numerous liquid hydrocarbons, that it is important to insure the use of the same substance which Hahnemann employed in his proving. This is made by agitating the liquid portion of commercial petroleum with sulphuric acid, and then rectifying the portion which this acid does not act upon. Its chemical constitution is very complex.

Properties and Tests.—It is a light oily fluid, colorless, or of a pale straw-color, and strong characteristic naphthalic smell. When agitated with a mixture of equal volumes of sulphuric acid and water, no change takes place beyond its imparting to the acid any yellow tint it may possess and itself becoming colorless. Dropped on white paper, it evaporates completely, leaving no greasy stain. To secure its freedom from other volatile oils, agitate with twice its bulk of rectified spirit, and filter through bibulous paper previously moistened with rectified spirit; or it may be separated from the spirit by means of a burette. It must be preserved in well-stoppered bottles.

Preparation for Homœopathic Use.—One part by weight of petroleum is dissolved in fifty parts by weight of alcohol.

Amount of drug power, $\frac{1}{100}$.

Dilutions must be prepared as directed under Class VI— β .

PETROSELINUM.

Synonyms, *Petroselinum Sativum*, *Hoffmann*. *Apium Petroselinum*, *Linn*. *Apium Hortensis*. *Carum Petroselinum*.

Nat. Ord., Umbelliferae.

Common Name, Parsley.

Parsley has a biennial root, with an annual, round, furrowed, jointed, erect, branching stem, about two feet in height. The radical leaves are compound, pinnated in ternaries, with the leaflets smooth, divided into three lobes, and notched at the margin. In the cauline leaves, the segments of the leaflets are linear and entire. The flowers are small, pale yellow, and disposed in terminal compound umbels, with a one or two-leaved general involucre, and partial ones composed of six or eight leaflets. The petals are five, roundish, and inflexed at their apex. The seeds (half fruits) are small, ovate, flat on one side, convex on the other, dark green, and marked with five longitudinal ridges. They have a strong terebinthinate odor, and a warm aromatic taste. The plant is a native of Sardinia, and other parts of Southern Europe, and is cultivated everywhere in gardens.

Preparation.—The fresh plant, gathered when coming into bloom, is chopped and pounded to a pulp, and pressed out *lege artis* in a piece of new linen. The expressed juice is then, by brisk agitation, mingled with an equal part by weight of alcohol. This mixture is allowed to stand eight days in a well-stoppered bottle, in a dark, cool place, and then filtered.

Drug power of tincture, $\frac{1}{4}$.

Dilutions must be prepared as directed under Class I.

PHELLANDRIUM AQUATICUM, *Linn*.

Synonyms, *Ænanthe Phellandrium*, *Lamarek*. *Ænanthe Sarmantosa*. *Feniculum Aquaticum*. *Feniculum Caballinum*.

Nat. Ord., Umbelliferae.

Common Names, Phellandrium. Five-leaved Water-Hemlock.

This biennial plant grows in swampy places and on river banks in Europe and Northern Asia. It has pale green, pinnately dissected leaves, with ovate lobed or pinnately cleft leaflets, the submersed ones narrow and threadlike. The flowers are white, in compound umbels, with short linear involucral leaves. The fruit is one-eighth to one-sixth of an inch long, nearly cylindrical, narrowed above, and oblong-ovate in shape. The three dorsal ribs are broad and obtuse, the two lateral ones larger, the four grooves narrow, each with a single oil tube, and two additional oil tubes on the surface of each mericarp; it is of a brown (and when collected in an unripe state a blackish-brown) color, has an unpleasant odor, recalling that of caraway, and a bitterish, somewhat acrid taste.

Preparation.—The fresh, carefully dried fruit, is finely powdered,

covered with five parts by weight of alcohol, and allowed to remain eight days, in a well-stoppered bottle, in a dark, cool place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{16}$.

Dilutions must be prepared as directed under Class IV.

PHOSPHORUS.

Symbol, P.

Atomic Weight, 31.

Origin and Preparation of Phosphorus.—Phosphorus exists mostly as phosphates, in many minerals, and in all plants and animals; the bones of the higher animals contain much phosphate of calcium. Phosphorus was discovered by Brandt (1669), of Hamburg, among the products of the dry distillation of urine, and about 1769 Gahn and Scheele detected the presence of phosphoric acid in bones, and the latter succeeded in isolating it. Phosphorus is made by treating calcined bones with sulphuric acid, evaporating the liquid, after mixing it with powdered charcoal, to complete dryness, and distilling the residue in a stoneware retort. In case the organic matter of bones is to be utilized in the manufacture of glue, the bones are treated with hydrochloric acid, and the liquid treated as stated. The retort is connected with a wide bent tube which dips into water, a number of retorts are placed in each furnace, and after the distillation is completed, the melted phosphorus is strained under water, and run into tubes of suitable size, where it congeals. Phosphorus is manufactured in the United States, but much of it is still imported.

Properties.—Phosphorus is seen in commerce in the form of cylindrical sticks, which are nearly colorless or pale yellow, transparent, of a waxy lustre, and about as hard as beeswax, and flexible at ordinary, but brittle at low temperatures. It is very easily inflammable in the air, and must be preserved and cut under water, in which it is insoluble. Its density is usually about 1.77; but after purification with alcoholic potassa was found by Böttger to be 2.089. It melts at 44° C. (111.2° F.), and may be cooled to 40° C. (104° F.) before it congeals again. The boiling point of phosphorus is 288° C. (550° F.), according to Dalton; Mitscherlich found it at 260° C. (500° F.); the density of the vapor is 4.3. Phosphorus is sparingly soluble in alcohol, ether, fixed and volatile oils; it crystallizes after fusion when slowly cooled, and from its solutions in volatile oils and carbon bisulphide. Exposed to the air it emits white vapors, which have an alliaceous odor and are luminous in the dark (phosphorescence), and when ignited burns with a brilliant white flame, giving off dense white vapors of phosphoric anhydrid. It unites directly also with sulphur, chlorine, iodine, bromine and with many metals, and precipitates some of the latter from their solutions. When kept in water and exposed to light and air, it is superficially corroded, and becomes white and opaque (Baudrimont, 1865), while phosphorous acid is found in the water; the change does not take place in water which is free from air.

Amorphous or Red Phosphorus.—This was discovered by Schrötter (1848), by heating ordinary or vitreous phosphorus for a long time to near its boiling point (about 240° C. = 464° F.) in an atmosphere in which it cannot burn. It is an amorphous dark red mass or powder, becomes nearly black on being boiled with potassa solution, is insoluble in simple solvents, remains unaltered in dry air, and enters into chemical combinations less readily than the ordinary variety. According to Hittorf (1865), it has the specific gravity 2.19, is infusible, volatilizes slowly above 260° C. (500° F.), and, according to Lemoine (1867), is best converted into ordinary or vitreous phosphorus by heating to near 450° C. (842° F.) in an atmosphere of nitrogen. At the temperature stated, Hittorf observed it to be converted into another modification, which forms black laminae of a metallic lustre, is less volatile even than amorphous phosphorus, but, like the latter, is gradually converted by heat into ordinary vitreous phosphorus.

Preparation for Homœopathic Use.—Strong (95 per cent.) alcohol with an excess of phosphorus is put into an open bottle in a hot-water bath, and after the phosphorus has melted, vigorously shaken till cold, then decanted.

Amount of drug power, $\frac{1}{10000}$.

Above saturate solution corresponds to the third decimal potency. Ten drops of this solution with ninety drops of strong alcohol give the 4x or 2 potency. Further potencies are made after the customary manner. In *Hahnemann's Chronic Diseases* a method is given for preparing phosphorus by trituration; alcoholic solutions, however, are preferable.

PHYSOSTIGMA.

Synonyms, Physostigma Venenosum, *Balfour*. Esere. Faba Calabarica. Faba Physostigmatis.

Nat. Ord., Leguminosæ.

Common Names, Calabar Bean. Chop Nut. Long known among the negroes of Western Africa as the Ordeal Bean of Calabar.

This is a climbing plant, with a ligneous stem, mounting on trees and shrubs, and frequenting especially the banks of streams, into which it often drops its fruit when ripe; and it is said that the people of Calabar derive their supply principally from the borders of the streams down which the fruits are carried. The root is spreading, with numerous fibrils, often having attached to them small succulent tubers. The flowers are axillary, multiflorous, pendulous raceme; rachis of each raceme zigzag. Calyx campanulate, four-cleft at apex, the upper division notched, its segments ciliated. Corolla papilionaceous, curved in a crescentic manner; it is of a pale pink color, with a purplish tinge. Stamens ten, diadelphous. Pistil more than one. Stigma blunt, covered by a ventricular hood, extending along the upper part of the convexity of the style. Legume dark brown, and straight, elliptico-oblong, with an apicular curved point, and outer and inner integuments easily separable; when ripe it is about seven inches long, and contains two or three seeds, separated by a woolly substance.

Preparation.—The bean is finely pulverized and weighed and covered with five parts by weight of alcohol, and allowed to remain eight days in a well-stoppered bottle, at ordinary temperature, in a dark place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{16}$.

Dilutions must be prepared as directed under Class IV.

PHYTOLACCA.

Synonyms, *Phytolacca Decandra*, Linn. *Blitum Americanum*. *Solanum Magnum Virginianum*.

Nat. Ord., *Phytolaccaceæ*.

Common Names, Poke. Skoke Root. Garget. Pigeon Berry. American Nightshade. Chongras. Cocum. Northern Jalap.

This is an indigenous plant, with a large perennial root, often five or six inches in diameter, divided into two or three principal branches, soft, fleshy, fibrous, whitish within, and covered with a brownish cuticle. The stems, which are annual, frequently grow to the height of six or eight feet, and divide into numerous spreading branches. They are round, very smooth, green when young, but purple after the berries have ripened. The leaves are scattered, ovate-oblong, entire, pointed, smooth, ribbed beneath, and on short footstalks. The flowers are numerous, small, and in long racemes, which are sometimes erect, sometimes drooping. The corolla consists of five ovate, concave, whitish petals, folding inwards. The ovary is green. There are ten stamens, and the same number of pistils. The raceme of flowers becomes a cluster of dark purple, almost black, shining berries, flattened above and below, and divided into ten cells, each containing one seed. The poke is abundant in all parts of the United States, also in the north of Africa and south of Europe.

Preparation.—The fresh root is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and after thoroughly mixing the pulp with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole, pour it into a well-stoppered bottle and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{4}$.

Dilutions must be prepared as directed under Class III.

PICHURIM.

Synonyms, *Nectandra Puchury Major*, Nees. *Faba Pichurim*. *Nuces Sassafras*.

Nat. Ord., *Laurineæ*.

Common Names, Pichurim Beans. Sassafras Nut.

These are the seeds of a tree growing in Brazil. The beans are the kernels of the fruit separated into halves. They are ovate-oblong or elliptical, flat on one side, convex on the other, of a grayish-brown color externally, chocolate-colored within, of an aromatic odor be-

tween that of nutmegs and sassafras, and of a spicy pungent taste. The seeds are about an inch and a half long, and half an inch broad.

Preparation.—The ripe seeds are finely powdered, covered with five parts by weight of alcohol, and allowed to remain eight days in a well-stoppered bottle in a dark, cool place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{15}$.

Dilutions must be prepared as directed under Class IV.

PILOCARPINUM MURIATICUM.

Synonym, Pilocarpin Muriate.

Origin and Preparation.—*Pilocarpin* is an alkaloid obtained by Byasson (1875) from jaborandi leaves. It is soluble in alcohol, ether, chloroform, ammonia and dilute acids. It is obtained from the aqueous solution of the alcoholic extract by adding an alkali, agitating with chloroform and evaporating the latter solution. The alkaloid is uncrystallizable, but A. W. Gerrard (1875) crystallized from alcohol a number of its salts, of which the *muriate* is most frequently employed.

Preparation for Homœopathic Use.—Muriate of pilocarpin is triturated, as directed under Class VII.

PIMPINELLA SAXIFRAGRA, Linn.

Synonyms, Pimpinella Alba. Pimpinella Hircinæ. Pimpinella Nostratis. Pimpinella Umbelliferae. Tragoselinum.

Nat. Ord., Umbelliferae.

Common Names, Bibernell. Small Burnet Saxifrage. Pimpinel.

This is a perennial umbelliferous European plant, growing on sunny hills, and in dry meadows and pastures. Rootstalk slender, hot, acrid. Stem one to three feet high, slender, furrowed, branched. Leaflets four to eight pair, very variable, serrate lobed or almost pinnatifid; lobes of cauline much narrower. Umbels flat-topped. Flowers small, white. Fruit one-eighth inch long, glabrous, broadly ovoid; styles short, reflexed. The root is brown-yellow or blackish, usually one-headed, not over one-half inch thick, finely anulated above and wrinkled and verrucose below; the bark is very thick, spongy, either white or yellowish, contains numerous resin-cells, and is radially striate, inclosing a yellow wood.

Preparation.—The fresh root, gathered in May, is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole, pour it into a well-stoppered bottle, and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Amount of drug power, $\frac{1}{4}$.

Dilutions must be prepared as directed under Class III.

PINUS SYLVESTRIS, Linn.**Nat. Ord.,** Coniferae.**Common Names,** Scotch Fir. Scotch Pine. Wild Pine.

This species of pine is distributed through the plains of northern and mountains of Southern Europe, Siberia and Menschuria. Its height is from 50 to 100 feet, the trunk attaining a circumference of 12 feet; wood red or white; bark red-brown, rough. Leaves two to three inches long, acicular, acute, grooved above, convex and glaucous beneath, minutely serruate, sheath fimbriate. Male catkins one-fourth inch long, spiked, yellow; connective produced. Female cones one to two inches long, one to three together, acute; scales few, ends rhomboid with a transverse keel and deciduous point. Seed one-half inch, wing cuneate, much exceeding the nucleus.

Preparation.—The fresh shoots are chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole, pour it into a well-stoppered bottle and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Amount of drug power, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

PIPER METHYSTICUM, Forster.**Synonym,** Macropiper Methysticum.**Nat. Ord.,** Piperaceae.**Common Names,** Ava-Ava. Kava-Kava.

This is a shrub, with cordate, acuminate, and many-nerved leaves, indigenous to the Sandwich and other islands of the Pacific Ocean. The root is large, woody, but spongy and light, has a thin grayish-brown bark, and a medullium consisting of a yellowish or yellow, occasionally pale reddish cellular tissue, and of numerous radiating linear wood-bundles. It has an agreeable odor, recalling that of lilac and of meadow-sweet, and a faintly pungent and slightly bitter taste.

Preparation.—The fresh root is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole, pour it into a well-stoppered bottle, and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

PIPER NIGRUM, Linn.**Synonyms,** Piper Trioicum. Murich.**Nat. Ord.,** Piperaceae.**Common Name,** Black Pepper.

The pepper vine is a perennial plant, with a round, smooth, woody, articulated stem, swelling near the joints, branched, and from eight to twelve feet or more in length. The leaves are entire, broad-ovate, acuminate, seven-nerved, coriaceous, very smooth, of a dark green color, and attached by strong sheath-like footstalks to the joints of the branches. The flowers are small, whitish, sessile, covering thickly a cylindrical spadix, and succeeded by globular berries, which are red when ripe. The berries are gathered before they are all perfectly ripe, and, upon being dried, become black and wrinkled. The dried berries are about as large as a small pea, externally blackish and wrinkled, internally whitish, of an aromatic smell, and a hot, pungent, almost fiery taste.

The plant grows wild in Cochin-China and various parts of India. It is cultivated on the coast of Malabar, in the peninsula of Malacca, in Siam, Sumatra, Java, Borneo, the Philippines, and many other places in the East.

Preparation.—The unripe, dried berries, finely powdered, are covered with five parts by weight of alcohol, and allowed to remain eight days in a well-stoppered bottle, in a dark, cool place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{16}$.

Dilutions must be prepared as directed under Class IV.

PLANTAGO MAJOR, *Linn.*

Nat. Ord., Plantaginacæ.

Common Names, Greater Plantain. Rib Grass. Way Bread.

This plant is very common in Europe and North America, often found growing by roadsides and footpaths. It has a round scape rising from a fibrous root, varying in height from one to three feet. The leaves are broadly ovate, smooth, entire or somewhat toothed, five to seven nerved, each of which contains a strong fibre, which may be pulled out, and abruptly narrowed into a long channelled petiole. The flowers are white, very small, imbricated, numerous, and densely disposed on a cylindrical spike, from five to twenty inches long. Small plants are frequently found with the spikes only half an inch to two inches long, and the leaves and stalk proportionately small. Stamens and styles long. Seeds numerous.

Preparation.—The fresh plant, gathered when coming into flower, is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole, pour it into a well-stoppered bottle, and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{4}$.

Dilutions must be prepared as directed under Class III.

PLATINA.

Synonyms, Platinum Metallicum. Platinum.

Symbol, Pt.

Atomic Weight, 198.

Origin and Preparation of Platinum.—This metal is found pure and in combination with palladium, rhodium, osmium, iridium and other metals in California, various parts of South America, in the Ural mountains, and in other parts of Europe, Asia and Africa. It is often met with in auriferous sand, and occasionally in lead, iron and other ores. The ore is treated with strong hydrochloric acid, well washed by elutriation, the residue treated with nitro-muriatic acid, the acid solution evaporated, redissolved in water, and precipitated with ammonium chloride; on igniting the resulting ammonio-platinic chloride, platinum is obtained in a spongy condition.

Properties.—Spongy platinum is gray, soft and porous, and fusible only by the aid of the oxyhydrogen blowpipe. It is of a silver-white color and metallic lustre, is soft like copper, possesses considerable malleability and ductility, and at a white heat may be forged. Platinum resists the action of most chemicals except mixtures of nitric with hydrochloric or hydrobromic acid; but at a high temperature it is readily attacked by most elements. With oxygen it forms a protoxide, Pt O , and a binoxide, Pt O_2 , which are reduced to the metal at a red heat. The platinous salts are brown, red or colorless; the platinic salts have a yellow or brown color.

Preparation for Homœopathic Use.—Precipitated metallic platinum is triturated, as directed under Class VII.

PLATINUM MURIATICUM.

Synonyms, Platina Chlorata. Platini Chloridum. Chloras Platinicus. Platinic Chloride.

Common Names, Muriate of Platinum. Chloride of Platinum.

Formula, $\text{Pt Cl}_4 \cdot 5 \text{ H}_2\text{O}$.

Molecular Weight, 430.

Preparation of Platinic Chloride.—It is prepared by dissolving three parts of platinum in a mixture of sixteen parts of hydrochloric and seven parts of nitric acid, evaporating the solution nearly to dryness, redissolving in hydrochloric acid, heating to expel the nitric acid, and evaporating at a moderate heat to dryness, when a red crystalline mass is left, which may be obtained from water in handsome red crystals, containing 46 per cent. of platinum.

Properties.—When heated to 100° C . these lose $4 \text{ H}_2\text{O} = 16.75$ per cent., and turn brown. If the salt is permitted to crystallize in the presence of free hydrochloric acid, brownish-red needles are obtained, which have the composition $\text{Pt Cl}_4 \cdot 2 \text{ H Cl} \cdot 6 \text{ H}_2\text{O}$, and contains 38 per cent. of platinum. This is the compound usually met with in commerce. Heated to above 110° C . it parts with hydrochloric acid and chlorine, and near 225° C . (437° F .) dark brown platinous chloride is left. Platinum chloride dissolves readily in alcohol and water, yield-

ing reddish-yellow liquids which precipitate the chlorides of potassium and of ammonium.

Preparation for Homœopathic Use.—One part by weight of pure platinic chloride is dissolved in ninety-nine parts by weight of distilled water.

Amount of drug power, $\frac{1}{100}$.

Dilutions must be prepared as directed under Class V— β .

PLECTRANTHUS FRUCTECOSUS, *L'Heritier*.

Synonym, Germanea Urticæfolia, *Linn*.

Nat. Ord., Labiatae.

This aromatic shrub is a native of the Cape of Good Hope, and is grown quite extensively in gardens in Germany, where it is used as a domestic remedy for intermittent fever, cramps, etc.

Preparation.—The dried, powdered herb is covered with five parts by weight of alcohol, and allowed to remain eight days, in a well-stoppered bottle in a dark, cool place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{10}$.

Dilutions must be prepared as directed under Class IV.

PLUMBAGO LITTORALIS, *Nobis*.

Nat. Ord., Plumbaginaceae.

Common Name, (in Brazil) Picao de Praia.

This is a creeper, inhabiting the shores in the bay of Rio Janeiro. Its stem is herbaceous, rounded, covered with short and rather stiff hairs. Its leaves are simple, opposite, gradually tapering to a short channeled petiole adhering to that of the opposite side, and forming tufts at certain intervals whence arise adventitious roots. They have a smooth, trapezoid, coarsely indented limb. The flowers form little axillary heads, with from fifteen to twenty flowers each, arising from an involucre with five divisions and supported by a somewhat filiform pedicel. Calyx tubulous, monophyllous, with five teeth, and much shorter than the tube of the corol. The corol is monopetalous, of a yellowish-white, tubulous, puffed up at its extremity, with five reflexed divisions, and five stamens with bilocular, connivent anthers which are longer than the corol. Ovary one-celled, flat at the top, whence proceeds a slender style, terminated by a glandular stygma which is longer than the stamens. Fruit monospermous, elongated, with a crustaceous integument which is covered with a number of stiff hairs that are bent over, and which presents irregular longitudinal furrows. The root is perennial and ramose.

Preparation.—The fresh leaves are chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole, pour it into a well-stoppered bottle, and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

PLUMBUM.

Synonyms, Plumbum Metallicum.

Common Name, Lead.

Symbol, Pb.

Atomic Weight, 207.

Origin and Preparation of Lead.—Lead is found in the United States and many other countries, occasionally as oxide, more frequently as carbonate (*white lead ore*), or in combination with other acids. The most abundant lead ore is *galena*, a sulphide of lead, $Pb\ S$, which is frequently associated with the sulphides of zinc, iron, copper, and silver. The metal is obtained from the *galena* by roasting it, whereby a portion is oxidized to sulphate of lead, while another portion parts with its sulphur, which escapes as sulphurous acid, the metal being converted into oxide. The newly formed compounds react with the unaltered *galena*, forming lead which fuses, and sulphurous acid which escapes. A considerable quantity of lead remains in the slag, which is used in a subsequent operation. The extraction of silver is effected by cupellation, and the oxide of lead is then reduced to the metallic state by heating it with charcoal.

Properties.—Lead has a bluish-gray color and a bright metallic lustre. It is a soft metal, and when cooled slowly leaves a mark on being drawn over paper. Its specific gravity is 11.4; it is very malleable and ductile, but less tenacious than most other common metals; fuses at $325^{\circ}\ C.$ ($617^{\circ}\ F.$), and volatilizes at a white heat. On congealing, it contracts considerably, and under some circumstances it may be obtained crystallized in regular octohedrons. When exposed to a moist atmosphere, it is superficially oxidized, and becomes covered with a grayish layer. In contact with water and air, or in the presence of a minute quantity of ammonia or of nitric acid, the metal is corroded, and small quantities of it are held in solution. Sulphates prevent the lead from being dissolved; or if dissolved, precipitate an insoluble sulphate.

Plumbum Metallicum Precipitatum.—To obtain pure lead in the form of a powder, the galvanic process of reduction by means of rods of zinc is the most convenient. Crystals of acetate of lead are dissolved in one hundred times their quantity of distilled water, and in four or six ounces of this solution, contained in a suitable porcelain dish, a few polished rods of zinc are put. The decomposition takes place immediately, and continues as long as the reduction of the acetate of lead is not completed. If this process of reduction is to succeed entirely, the following rules should be observed: 1. The leaden crystals which cluster around the rods of zinc should be frequently detached, in order to prevent the formation of thick laminæ which it would be difficult to pulverize. 2. The liquid, which now contains acetate of zinc, should be poured off as soon as the reduction ceases, and a fresh solution of the acetate of lead should be added. 3. As soon as

the operation is concluded, the precipitate, which is a dark gray, loose, porous mass, though still cohering in lumps, should be washed with hot distilled water, avoiding every mechanical pressure, lest the soft mass should be pressed into firm balls. 4. As soon as the water which is used for washing flows off quite clear, the precipitate should be collected in a filter, the liquid should be removed by gently pressing the precipitate between the fingers, after which the metal is to be taken out of the filter and pressed with the hand between several layers of blotting-paper until the metal ceases to adhere to the paper; finally, gently rub the metal in a warmed porcelain mortar, in order to effect its perfect desiccation.

Preparation for Homœopathic Use.—The precipitated lead is triturated as directed under Class VII.

PLUMBUM ACETICUM.

Synonyms, Acetas Plumbicus. Plumbi Acetas. Saccharum Saturni.

Common Names, Acetate of Lead. Sugar of Lead.

Formula, $\text{Pb } 2\text{C}_2 \text{H}_3 \text{O}_2 \cdot 3\text{H}_2 \text{O}$.

Molecular Weight, 379.

Preparation of Acetate of Lead.—Take of oxide of lead in fine powder, twenty-four ounces; acetic acid, two pints, or a sufficiency; distilled water, one pint. Mix the acetic acid and the water, add the oxide of lead, and dissolve with the aid of a gentle heat. Filter, evaporate till a pellicle forms, and set aside to crystallize, first adding a little acetic acid should the fluid not have a distinctly acid reaction. Drain and dry the crystals on filtering paper without heat.

Properties.—Pure acetate of lead crystallizes in colorless prisms, which have an acetous odor and a sweet astringent taste. It is slightly efflorescent in the air, and on continued exposure is superficially converted into carbonate of lead. It fuses at 75.5°C . (168°F .), and congeals on cooling slowly to a radiating crystalline mass. It contains 14.2 per cent. of water of crystallization, which it loses at about 110°C . (230°F .), over sulphuric acid and by the action of absolute alcohol, crystallizing from this liquid in an anhydrous condition, but when dissolved in hot stronger alcohol the salt crystallizes on cooling with $2\text{H}_2 \text{O}$. It dissolves at the ordinary temperature in about two parts, at 40°C . (104°F .) in one part, and at the boiling point in a half part of water. The solution has a slight acid reaction, and if concentrated and mixed with strong alcohol gradually separates a portion of the salt in crystals. It dissolves also, though less freely, in alcohol, and is precipitated from this solution as a crystalline powder on the addition of ether. The aqueous solution acquires a red color on the addition of a little dilute solution of ferric chloride, and is precipitated by the various reagents for lead salt.

Tests.—Acetate of lead should yield a clear solution with distilled water. A slight turbidity resulting from the presence of a little carbonate must disappear on the addition of a small quantity of acetic acid. Perfect solubility indicates the absence of sulphate and notable

quantities of chloride. The aqueous solution, completely precipitated by sulphuretted hydrogen, should yield a filtrate, which is not precipitated by ammonia and sulphhydrate of ammonium (zinc, etc.), or oxalic acid (calcium, barium), and it does not leave any fixed residue on being evaporated to dryness. Small quantities of copper would be indicated by the blue color of the filtrate, obtained after precipitating the solution of the salt with an excess of ammonia. Thirty-eight grains of acetate of lead dissolved in water require for complete precipitation two hundred grain-measures of the volumetric solution of oxalic acid.

Preparation for Homœopathic Use.—One part by weight of pure acetate of lead is dissolved in ninety-nine parts by weight of distilled water.

Amount of drug power, $\frac{1}{100}$.

Dilutions must be prepared as directed under Class V— β .

Triturations are prepared as directed under Class VII.

NOTE.—The trituration is to be preferred on account of its stability.

PLUMBUM CARBONICUM.

Synonyms, Carbonas Plumbicus. Cerussa. Magisterium Plumbi. Plumbic Carbonate. Plumbi Carbonas.

Common Name, Carbonate of Lead.

Formula, $2\text{Pb CO}_3 \cdot \text{PbH}_2 \text{O}_2$.

Molecular Weight, 775.

Preparation of Carbonate of Lead.—On passing carbonic acid gas through a solution of acetate of lead, or on adding an alkaline carbonate to a solution of a neutral lead salt, a precipitate of Pb CO_3 is obtained, which, as a pigment, has less *body* than the basic salt. The latter is obtained in two ways. One method, known as the *Dutch process*, is as follows: Cast sheets of lead are suspended in earthen pots containing a small quantity of vinegar or pyroligneous acid; a number of these pots are arranged in rows, alternating with layers of dung or spent tan, until a shed is filled, which is entirely covered with the same material. A warm and moist atmosphere, charged with carbonic acid, is thus produced in the shed, favorable for the oxidation of the metal, and its conversion by the acetic vapors into basic acetate of lead, which is decomposed by the carbonic acid, yielding white lead and neutral acetate. The latter again unites with a fresh portion of oxide, forming basic acetate of lead, which is again acted upon by the carbonic acid; and the process continues until, in the course of a few weeks, the lead is completely covered with a thick crust of white lead, which is detached, ground with water and washed, to remove acetate of lead, and dried. Various modifications of this process have been recommended and are in use.

The other method is known as *Thenard's process*, according to which a solution of subacetate is prepared in the usual way, and carbonic acid gas passed through it, the filtrate from the precipitate being again used in the preparation of the lead solution. This process has been modified by Benson, so that levigated litharge is mixed with one or two per cent. of sugar of lead and sufficient water to form a thin paste, which,

with frequent stirring, is exposed to the action of carbonic acid, until this ceases to be absorbed; the carbonate is washed with water.

Properties.—Commercial carbonate of lead is in pulverulent masses, or forms a soft, heavy, white powder, which becomes black by sulphuretted hydrogen; it is insoluble in water and alcohol, but dissolves with effervescence in diluted acetic or nitric acid without leaving any residue. The solutions yield, with sulphuric acid, a white, and with potassium iodide, a yellow precipitate. The white precipitates occasioned in the solution by soda and potassa are soluble in an excess of the precipitant. Heated to 155° C. (311° F.), carbonate of lead parts with its water; near 180° C. (356° F.) it begins to lose carbonic acid, and when heated before the blowpipe upon charcoal it turns yellow, and yields metallic globules of lead.

Tests.—Carbonate of lead may be adulterated with the sulphates of lead, barium or calcium, which would be left behind as a white precipitate upon treatment with dilute nitric acid. Other adulterations may be detected by treating the solution with sulphuretted hydrogen, ammonia, sulphhydrate of ammonia and oxalic acid, as described under acetate of lead.

Preparation for Homœopathic Use.—Pure carbonate of lead is triturated, as directed under Class VII.

PLUMBUM IODATUM.

Synonyms, Ioduretum Plumbicum. Plumbi Iodidum. Plumbic Iodide.

Common Name, Iodide of Lead.

Formula, $Pb I_2$.

Molecular Weight, 461.

Preparation of Iodide of Lead.—Take of nitrate of lead, iodide of potassium, each four troy ounces; distilled water a sufficient quantity. With the aid of heat dissolve the nitrate of lead in a pint and a half, and the iodide of potassium in half a pint of distilled water, and mix the solutions. Allow the precipitate formed to subside, and, having poured off the supernatant liquid, wash it with distilled water, and dry it with a gentle heat.

Properties.—Iodide of lead, if precipitated in the cold, is a bright yellow powder, and, if obtained from boiling solutions, crystallizes in thin, shining, golden-yellow scales. It has the sp. gr. 6.1, is inodorous, of a slight metallic taste, and, when heated, turns brick-red, blackish-brown, fuses to a red-brown liquid, and volatilizes, partly undecomposed, at a strong red heat; on cooling, it gradually acquires again its yellow color. It is permanent in a dry atmosphere, but when exposed to the light while moist, is slowly decomposed, binoxide and carbonate of lead being formed, besides free iodine. Denot (1834) ascertained that it requires 1,235 parts of cold and 187 parts of boiling water for solution. According to Lassaigne (1831), the colorless aqueous solution, saturated at 20° C. (68° F.), contains .0017 per cent. of iodide of lead. It dissolves in solutions of ammonium chloride, and of soluble iodides and acetates, and is at least partly converted into double iodides.

Tests.—Its *purity* is ascertained from the properties described. The presence of a double compound with potassium iodide is indicated by the lighter color of the product, and is proven by dissolving a sample in warm solution of ammonium chloride, precipitating the lead with either sulphuric or hydrosulphuric acid, evaporating the filtrate to dryness, and igniting, when no fixed residue should be left. The presence of lead oxyiodide renders the salt incompletely soluble in hot water.

Preparation for Homœopathic Use.—Pure iodide of lead is triturated, as directed under Class VII.

PODOPHYLLUM.

Synonyms, *Podophyllum Peltatum*, Linn. *Aconitifolius Humilis*. *Anapodophyllum Canadense*.

Nat. Ord., Berberidaceæ.

Common Names, May-Apple. Mandrake. Indian Apple. Ground Lemons. Duck's Foot.

This is an indigenous herbaceous plant, and the only species of the genus. The root (rhizome) is perennial, creeping, usually several feet in length, about one-quarter of an inch thick, brown externally, smooth, jointed, and furnished with radicles at the joints. The stem is about a foot high, erect, round, smooth, divided at top into two petioles, and supporting at the fork a solitary one-flowered peduncle. Each petiole bears a large, peltate, palmate leaf, with six or seven wedge-shaped lobes, irregularly incised at the extremity, yellowish-green on their upper surface, paler and slightly pubescent beneath. The flower is nodding. The calyx is composed of three oval, obtuse, concave deciduous leaves. The corolla has from six to nine white, fragrant petals, which are obovate, obtuse, concave, with delicate transparent veins. The stamens are from 13 to 20, shorter than the petals, with oblong, yellow anthers, of twice the length of the filaments. The stigma is sessile, and rendered irregular on its surface by numerous folds or convolutions. The fruit is a large oval berry, crowned with the persistent stigma, and containing a sweetish fleshy pulp, in which about twelve ovate seeds are imbedded. It is, when ripe, of a lemon-yellow color, diversified by round brownish spots.

The plant is extensively diffused through the United States, growing luxuriantly in moist, shady woods, and in low marshy grounds. The flowers appear about the end of May and beginning of June; and the fruit ripens in the latter part of September.

Preparation.—The fresh root, gathered when the fruit is quite ripe is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole, pour it into a well-stoppered bottle, and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, †.

Dilutions must be prepared as directed under Class III.

POLYGONUM HYDROPIPEROIDES, Michaux.

Synonym, Polygonum Mite, *Persoon*, (not of *Schrank*).

Nat. Ord., Polygonaceæ.

Common Name, Mild Water Pepper.

This is an indigenous perennial, growing in wet places, and in shallow water, very common, especially southward. It is from one to three feet high, stem smooth, and branching; the narrow sheaths hairy, fringed with bristles; leaves narrowly lanceolate, sometimes oblong; spikes erect, slender, sometimes filiform, often interrupted at the base, one to two and a half inches long; flowers small, flesh-color or nearly white; stamens eight; style three-cleft; achenium sharply triangular, smooth and shining. The herb is not acrid. Flowers appear in late summer and early autumn.

Preparation.—The fresh plant is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole, pour it into a well-stoppered bottle and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Amount of drug power, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

POLYGONUM PUNCTATUM, Elliott.

Synonyms, Polygonum Acre, *Humboldt*, *Bonpland* and *Kunth*. Polygonum Hydropiperoides, *Pursh*, (not of *Michaux*).

Nat. Ord., Polygonaceæ.

Common Names, Water Smartweed. Biting Persicaria. Knotweed. Wild Smartweed.

This is an indigenous perennial, growing in wet places, very common, especially southward. It is from two to five feet high, nearly smooth, stems rooting at the decumbent base; leaves larger and longer than in the *P. HYDROPIPER*, *Linn.*, taper-pointed; spikes erect; flowers whitish; sometimes flesh-colored; stamens eight; style mostly three-parted, and the achenium sharply triangular, smooth and shining. The herb is pungently acrid. Flowers appear in late summer or early autumn.

Preparation.—The fresh plant is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole, pour it into a well-stoppered bottle, and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Amount of drug power, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

POPULUS.

Synonym, *Populus Tremuloides*, *Michaux.*

Nat. Ord., Salicaceæ.

Common Names, American Aspen. Quaking Aspen. Quiver Leaf. Trembling Poplar.

This is an indigenous tree, growing from twenty to fifty feet high; in woods, very common. Bark smooth, greenish-white. Leaf-stalk long, slender, and laterally compressed, which accounts for the continual agitation of the foliage by the slightest breeze. Leaves roundish-heart-shaped, with a short, sharp point, and small, somewhat regular teeth, smooth on both sides with downy margins; scales cut into three or four linear divisions, fringed with long hairs.

Preparation.—The fresh inner bark is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole, pour it into a well-stoppered bottle and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Amount of drug power, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

PROPYLAMINUM.

Synonyms, Propylamin. Trimethylamina.

Formula $(CH_3)_3N$.

Molecular Weight, 59.

Origin and Preparation of Trimethylamina.—This compound, frequently incorrectly called *propylamin*, with which it is isomeric, has been obtained from ergot (*secalina*), from the leaves of *Beta vulgaris* and *Chenopodium vulvaria*, from the flowers of *Arnica montana*, *Pyrus communis*, *Sarbus aucuparia*, and *Cratægus oxyacantha*, and from cod-liver oil, bone-oil and guano. It is also produced on heating codeia with potassa, but may be economically obtained from herring-pickle, which contains this alkaloid in considerable quantity, and owes to it its peculiar odor. A mixture of herring-pickle and lime is subjected to distillation, the alkaline distillate is neutralized with hydrochloric acid and evaporated, and the saline residue is treated with absolute alcohol, which leaves ammonium chloride undissolved. The alcoholic solution is evaporated, the residue redissolved in a little water, and again carefully distilled with lime. If the vapors are first passed through an empty bottle before they are condensed by means of ice or conducted into water, several less volatile alkaloids are separated in the bottle. Large quantities of trimethylamina are now obtained from the residue left in the preparation of sugar from beets.

Properties.—In its pure state trimethylamina is a colorless, thin, and strongly alkaline liquid, having the peculiar odor of herring-pickle, and boiling at $9.8^{\circ} C.$ ($49.6^{\circ} F.$). At ordinary temperatures it is a colorless inflammable gas. It is readily soluble in water and alcohol, and an aqueous solution of it is met with in commerce as *propylamin*.

The chloroplatinate of trimethylamina crystallizes in well-defined orange-colored octohedrons, and contains 37.21 per cent. of platinum.

Preparation for Homœopathic Use.—One part by weight of pure trimethylamina is dissolved in ninety-nine parts by weight of distilled water.

Amount of drug power, $\frac{1}{100}$.

Dilutions must be prepared as directed under Class V— β .

PRUNUS PADUS, *Linn.*

Synonyms, Cerasus Padus. Padus Avium. Prunus Racemosa. Prunus Vulgaris.

Nat. Ord., Rosaceæ.

Common Name, Bird Cherry.

This tree is distributed through Europe, Northern Africa, Siberia and Western Asia to the Himalayas. It is from ten to twenty feet in height, growing in copses and woods, and is found at an elevation of 1,500 feet in Yorkshire. Leaves are from two to four inches long, elliptical or obovate, acutely doubly serrate, unequally cordate at the base, axils of the nerves pubescent; stipules linear-subulate, glandular-serrate. Racemes three to five inches long, from short lateral buds, lax-flowered. Flowers half an inch to three-quarter inch in diameter, white, erect, then pendulous; pedicels quarter inch long, erect in fruit; bracts deciduous, linear. Calyx-lobes obtuse, glandular-serrate. Petals erose. Drupe one-third inch in diameter, ovoid, black, bitter; stone globose, rugose. Flowers appear in May.

Preparation.—The fresh bark of the young twigs gathered in spring is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole, pour it into a well-stoppered bottle and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Amount of drug power, $\frac{1}{4}$.

Dilutions must be prepared as directed under Class III.

PRUNUS SPINOSA, *Linn.*

Synonyms, Acacia Germanica. Prunus Communis. Prunus In-stitia.

Nat. Ord., Rosaceæ.

Common Names, Sloe. Blackthorn.

This tree is a native of Europe, but has been introduced to this country, where it is found growing along roadsides and waste places in New England and southward to Pennsylvania. Bark black; branches thorny; leaves obovate-oblong or ovate-lanceolate, sharply serrate, at length glabrous; pedicels glabrous; fruit small, globular, black with a bloom, the stone turgid, acute on one edge. Flowers precede the leaves.

Preparation.—The fresh flower-buds, just opening, are chopped

and pounded to a pulp and weighed, and then mixed thoroughly with two-thirds by weight of alcohol, and the whole pressed out through a piece of new linen. The tincture thus obtained is allowed to stand eight days in a well-stoppered bottle in a dark, cool place and then filtered.

Amount of drug power, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class II.

PSORINUM, *Hering*.

A Nosode.

Dr. Constantine Hering gives the following account of its procurement on page 366, Vol. II. of the *North American Journal of Homoeopathy*:

"In the autumn of 1830, I collected the pus from the itch pustule of a young and otherwise healthy negro. He had been handling some stuff from Germany, and had thus been infected (Dr. H. at that time resided in Surinam), but whether by means of *acari* or not I cannot say. The pustules were full, large and yellow, particularly between the fingers, on the hands and forearms. I opened all the mature, unscratched pustules for several days in succession, and collected the pus in a vial with alcohol. After shaking it well and allowing it to stand, I commenced my provings with the tincture on the healthy. Its effects were striking and decided. I administered it to the sick with good results, and sometimes witnessed aggravations. I called this preparation *Psorinum*.

"When this alcohol is placed in a watch-glass and allowed to evaporate, small, needle-shaped and transparent crystals of a cooling, pungent taste will be left behind. I have always been of the opinion that this salt, contained in the morbid product, was the cause of its peculiar effects."

Preparation.—From the tincture obtained as described above, attenuations are prepared according to Class VI.—3.

PTELEA TRIFOLIATA, *Linn.*

Synonyms, *Amyris Elemifera*. *Ptelea Viticifolia*.

Nat. Ord., Rutaceæ.

Common Names, Wafer Ash. Wingseed. Shrubby Trefoil. Hop Tree.

This shrub is indigenous, growing abundantly west of the Alleghanies, in shady, moist hedges, and in rocky places. It is from six to eight feet high, with leaves trifoliate, and marked with pellucid dots; the leaflets are sessile, ovate, short, acuminate, downy beneath when young, crenulate or obscurely toothed; lateral ones inequilateral, terminal ones cuneate at base, from three to four and a half inches long, by from one and one-fourth to one and one-half inches wide. The flowers are polygamous, greenish-white, nearly half an inch in diameter, of a disagreeable odor, and disposed in terminal corymbose cymes. Stamens mostly four; style, short; fruit, a two-celled and two-seeded samara, nearly one inch in diameter, winged all round, nearly orbicular.

Preparation.—The fresh bark of the root is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole, pour it into a well-stoppered bottle, and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{4}$.

Dilutions must be prepared as directed under Class III.

PULSATILLA.

Synonyms, Pulsatilla Nigricans. Pulsatilla Pratensis, *Miller*. Anemone Pratensis, *Linn.* Herba Venti.

Nat. Ord., Ranunculaceæ.

Common Names, Meadow Anemone. Pasque-Flower. Wind-Flower.

The small or true meadow anemone is found on sunny elevated places and pasture-grounds where the soil is sandy, also in clear pine-forests in Central and Northern Europe. The leaves, only imperfectly developed before the flowering-time, stand at the root, petiolate, bipinnate; from the crown of leaves lying upon the ground rises the round flower-scape, which is three to six inches long, straight and leafless, at the top of which the beautiful campanulate, black violet-brown flower appears, whose six petals are a little narrowed at the points and then revolute; it is pendulous during the flowering time. The sessile involucre consists of three, many-fold linear-lanceolate pinnate-cleft leaflets, at first sitting tight under the flower, later, by elongation of the peduncle standing remote; the whole plant is set with many, soft, silk-like, white hairs, and has a wooly, lax appearance. It is odorless, but shows when bruised, a most acrid vapor, causing many tears. The *anemone pulsatilla* to which it is very similar, distinguishes itself by more hair, much more shaggy scape, curved above, by its flower which is nearly *only half as big* and *pendulous*, of much darker color and has the petals at the point bent backwards.

Preparation.—The fresh plant, gathered when in flower, is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole, pour it into a well-stoppered bottle, and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{4}$.

Dilutions must be prepared as directed under Class III.

PULSATILLA NUTTALIANA, *De Candolle*.

Synonyms, Anemone Ludoviciana, *Nuttall*. Anemone Flavescens. Clematis Hirsutissima. Pulsatilla Patens.

Nat. Ord., Ranunculaceæ.

Common Names, American Pulsatilla. Pasque-Flower.

This plant is found in North America, from Illinois and Wisconsin west to the Rocky Mountains, and south to Louisiana. Its character is as follows: villous, with long silken hairs. Stem erect; in flower, very short; in fruit, eight to twelve inches high. Leaves long-stalked, ternately divided, the lateral divisions two-parted, the middle one stalked and three-parted, the segments once or twice cleft into narrowly linear and acute lobes. Involucres lobed like the leaves, sessile, subulately dissected, concave or cup-shaped in position. Sepals five to seven, purplish, spreading, about one inch long, silky outside. Flowers single, appearing before the leaves, pale purple, cup-shaped. Carpels 50 to 75, with long plumous tails, one to two inches in length, collected into a roundish head. Flowers appear in early spring.

Preparation.—The fresh plant, gathered when in flower, is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole, pour it into a well-stoppered bottle, and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

PYCNANTHEMUM LINIFOLIUM, *Pursh.*

Nat. Ord., Labiatae.

Common Name, Virginia Thyme.

This plant is found growing from Southern New England to Illinois and southward. It has rigid, narrowly linear sessile crowded leaves, which are entire and three-nerved; the flowers are in terminal hemispherical clusters, supported by imbricated rigidly pointed bracts. The plant has a resinous and bitter taste. Flowers appear in August and September.

Preparation.—The fresh plant is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole, pour it into a well-stoppered bottle, and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Amount of drug power, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

QUASSIA.

Synonyms, Quassia Amara, *Linn.* Picrænia Excelsa. Picrasma Excelsa. Simuraba Excelsa.

Nat. Ord., Simarubaceæ.

Common Names, Quassia. Surinam Quassia. Bitter Ash. Bitter Wood.

The bitter quassia is a small branching tree or shrub, with alternate

leaves, consisting of two pairs of opposite pinnæ, with an odd one at the end. The leaflets are elliptical, pointed, sessile, smooth, of a deep green color on their upper surface, and paler on the under. The common footstalk is articulated, and edged on each side with a leafy membrane. The flowers, which are hermaphrodite and decandrous, are bright red, and terminate the branches in long racemes. The fruit is a two-celled capsule containing globular seeds. *Quassia amara* is a native of Surinam, and is also found growing in some of the West India Islands. The whole plant is excessively bitter.

Preparation.—The dried wood, of the branches and trunk of the tree, is finely powdered, covered with five parts by weight of alcohol, and allowed to remain eight days in a well-stoppered bottle, in a dark, cool place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Amount of drug power, $\frac{1}{16}$.

Dilutions must be prepared as directed under Class IV.

QUILLAIA SAPONARIA, *Molina*.

Nat. Ord., Rosaceæ.

Common Names, Quillaya. Soapbark.

This is an evergreen tree, indigenous to Peru and Chili. The bark comes into market in flat pieces, sometimes two or three feet long, several inches wide, and one-quarter of an inch thick. The brown corky layer is usually removed, small patches of it merely adhering to the outer surface, which is otherwise nearly smooth, and pale brownish-white, like the inner surface. The bark is hard and tough, breaks with a splintery fracture, and shows upon transverse section a checkered appearance due to the tangential arrangement of the light brown bast fibres and white bast parenchyma, and to the white narrow radial lines of the medullary rays. The bark has no odor, but its dust is acrid and sternutatory; it has a persistent acrid taste, and its infusion foams like a solution of soap.

Preparation.—The dry bark is finely powdered, covered with five parts by weight of alcohol, and allowed to remain eight days in a well-stoppered bottle in a dark, cool place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{16}$.

Dilutions must be prepared as directed under Class IV.

RANUNCULUS ACRIS, *Linn*.

Synonyms, *Ranunculus Californicus*. *Ranunculus Canus*. *Ranunculus Delphinifolius*.

Nat. Ord., Ranunculaceæ.

Common Names, Batchelor's Buttons. Meadow Crowfoot. Small Buttercup. Yellow Weed.

This species differs from the creeping crowfoot (*Ran. Repens*) in being taller and without runners, and in having the divisions of the

leaves all sessile. It is found growing in Europe, Asia and North America.

Preparation.—The fresh herb, gathered in October, is chopped and pounded to a pulp and pressed out in a piece of new linen. The expressed juice is then, by brisk agitation, mingled with an equal part by weight of alcohol, allowed to stand eight days in a well-stoppered bottle in a dark, cool place, and then filtered.

Amount of drug power, $\frac{1}{4}$.

Dilutions must be prepared as directed under Class I.

RANUNCULUS BULBOSUS, Linn.

Synonym, *Ranunculus Tuberosus*.

Nat. Ord., Ranunculaceæ.

Common Names, Crowfoot. Bulbous-rooted Buttercup.

This species of crowfoot is perennial, with a solid, fleshy root (corm or cormus), and several annual, erect, and branching stems, from nine to eighteen inches high. The radical leaves, which stand on long footstalks, are ternate or quinate, with lobed and dentate leaflets. The leaves of the stem are sessile and ternate, the upper more simple. Each stem supports several solitary, bright yellow, glossy flowers, upon furrowed, angular peduncles. The petals are obcordate, and arranged so as to resemble a small cup. At the inside of the claw of each petal is a small cavity, covered with a minute wedge-shaped emarginate scale. The fruit consists of numerous naked seeds, in a spherical head. The stem, leaves, peduncles, and calyx are hairy. In May and June our pastures are everywhere adorned with the rich yellow flowers of this species of *Ranunculus*.

Preparation.—The fresh, blooming plant is gathered in June, the herb separated from the bulbs, and the juice pressed out; the bulbs, with the addition of a little alcohol, are pounded to a viscous pulp, and also pressed out. The juices thus obtained are mixed with an equal part by weight of alcohol. Two parts by weight of alcohol are poured upon the residuum of the expressed bulbs, subjected to maceration for three days, and then pressed out. This essence is mixed with that obtained by expressing the herb and bulbs, and allowed to stand eight days in a well-stoppered bottle, in a dark, cool place, and then filtered.

Drug power of tincture, $\frac{1}{4}$.

Dilutions must be prepared as directed under Class I., except that forty drops of tincture to sixty drops of dilute alcohol are used for the first decimal, and four drops of tincture to ninety-six drops of dilute alcohol for the first centesimal dilution.

RANUNCULUS FLAMMULA, Linn.

Synonyms, *Ranunculus Alismaefolius*. *Ranunculus Lingua*.

Nat. Ord., Ranunculaceæ.

Common Names, Small or Burning Crowfoot. Marsh Buttercup. Spearwort.

A sort of buttercup growing on moist meadows, near rivulets and on marshes, the articulate, creeping root of which sprouts forth stems, one or more feet high, prostrate at the base, hollow, naked, often striking roots. The alternate leaves are entire or dentate, the lower petiolate, the upper ones clasping, all naked. The small numerous yellow flowers stand single at the side and top, on long, round pedicels, and leaves smooth, roundish, seed enveloped.

Preparation.—The fresh herb (without the root), gathered while in bloom, is chopped and pounded to a pulp and pressed out in a piece of new linen. The expressed juice is then, by brisk agitation, mingled with an equal part by weight of alcohol. This mixture is allowed to stand eight days in a well-stoppered bottle, in a dark, cool place, and then filtered.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class I.

RANUNCULUS REPENS, Linn.

Synonyms, Ranunculus Lanuginosus. Ranunculus Tomentosus.

Nat. Ord., Ranunculaceæ.

Common Names, Creeping Crowfoot. Creeping Buttercup.

This species resembles *Ran. Bulb.*, but is without the bulbous base, produces long runners, has the divisions of the leaves stalked, a spreading calyx, and the akenes margined and furnished with a rather straight beak. It is a native of Europe and North America.

Preparation.—The fresh herb, gathered in October, is chopped and pounded to a pulp and pressed out in a piece of new linen. The expressed juice is then, by brisk agitation, mingled with an equal part by weight of alcohol, and allowed to stand eight days in a well-stoppered bottle, in a dark, cool place, and then filtered.

Amount of drug power, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class I.

RANUNCULUS SCCLERATUS, Linn.

Synonyms, Ranunculus Palustris. Herba Sardoa.

Nat. Ord., Ranunculaceæ.

Common Names, Celery-leaved Crowfoot. Cursed Crowfoot. Marsh Crowfoot.

This species is very variable in size, smooth, with a hollow stem, roundish reniform, three-cleft and lobed or toothed leaves, small, pale yellow flowers, and oblong heads of ovate and short pointed akenes. The juice of the plant is acrid and blistering. Flowers appear from June to August.

Preparation.—The fresh herb, gathered in October, is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole, pour it into a well-stoppered bottle, and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Amount of drug power, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

RAPHANUS SATIVUS NIGER, *Linn.*

Synonyms, *Raphanus Hortensis.* *Raphanus Nigrum.*

Nat. Ord., *Cruciferae.*

Common Names, Black Garden Radish. Spanish Black Radish.

This radish is a native of China, but has been cultivated all over Europe from time immemorial, and is somewhat cultivated in this country. The very large, roundish, turnip-shaped root, attaining a weight of more than one pound, has a black or black-gray skin, white, compact, very juicy flesh and an especially pungent taste and smell.

Preparation.—In the month of July, the fresh roots of medium size (hollow or juiceless roots are to be rejected), are chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole, pour it into a well-stoppered bottle and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Amount of drug power, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

RESINA ITU.

Synonym, *Itu.*

This is a rosin spoken of in Mure's *Materia Medica*, of the Brazilian Empire, as coming from the province of St. Paul, and being used empirically for hernia.

Preparation—The rosin is triturated, as directed under Class VII.

RHEUM.

Synonyms, *Rhabarbarum.* *Rheum Palmatum, Linn.*

Nat. Ord., *Polygonaceae.*

Common Name, *Rhubarb.*

Leaves roundish-cordate, half palmate; the lobes pinnatifid, acuminate, deep dull green, not wavy, but uneven and very much wrinkled on the upper side, hardly scabrous at the edge, minutely downy on the under side; sinus completely closed; the lobes of the leaf standing forwards beyond it. Petiole pale green, marked with short purple lines, terete, obscurely channeled quite at the upper end. Flowering stems taller than those of any other species. This species is said to inhabit China in the vicinity of the great wall.

Preparation.—The powdered root is kneaded with a small quantity of deliquescent carbonate of potash to a thick paste (pulverized Rhei, four parts; Kali carb., one part; Aqua destill., one part). This paste is then covered with five parts by weight of alcohol, and allowed to remain eight days in a well-stoppered bottle in a dark, cool place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{16}$.

Dilutions must be prepared as directed under Class IV.

Triturations of the powdered root are prepared as directed under Class VII.

RHODIUM.

Symbol, Rh.

Atomic Weight, 104.

Origin and Preparation of Rhodium.—The solution from which platinum and palladium have been separated, in the manner already described, is mixed with hydrochloric acid, and evaporated to dryness. The residue is treated with alcohol of specific gravity 0.837, which dissolves everything except the double chloride of rhodium and sodium. This is well washed with spirit, dried, heated to whiteness and then boiled with water, whereby sodium chloride is dissolved out, and metallic rhodium remains.

Properties.—Thus obtained, rhodium is a white, coherent, spongy mass, more infusible and less capable of being welded than platinum. Its specific gravity varies from 10.6 to 11. Rhodium is very brittle; reduced to powder and heated in the air, it becomes oxidized, and the same alteration happens to a greater extent when it is fused with nitrate or bisulphate of potassium. None of the acids, singly or conjoined, dissolves this metal, unless it be in the state of alloy, as with platinum, in which state it is attacked by nitro-muriatic acid.

Preparation for Homœopathic Use.—Pure rhodium is triturated as directed under Class VII.

RHODODENDRON.

Synonym, Rhododendron Chrysanthemum, Linn.

Nat. Ord., Ericaceæ.

Common Names, Yellow-flowered Rhododendron. Rosebay.

This is a beautiful evergreen shrub, about a foot high, with spreading branches, and oblong, obtuse, thick leaves, narrowed towards their footstalks, reflexed at the margin, much veined, rugged and deep green upon their upper surface, ferruginous or glaucous beneath, and surrounding the branches upon strong petioles. The flowers are large, yellow, on long peduncles, and in terminal umbels. The corolla is wheel-shaped, with its border divided into five roundish, spreading segments. The plant is a native of Siberia, delighting in mountainous situations, and flowering in July. The leaves, when fresh, have a feeble odor, said to resemble that of rhubarb.

Preparation.—The carefully dried leaves, finely powdered, are covered with five parts by weight of alcohol, and allowed to remain eight days in a well-stoppered bottle in a dark, cool place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{16}$.

Dilutions must be prepared as directed under Class IV.

RHUS AROMATICA, Aiton.

Nat. Ord., Anacardiaceæ.

Common Names, Fragrant Sumach. Sweet Sumach.

This indigenous straggling bush is found growing in dry rocky soil, from Vermont westward and southward. Leaves pubescent when young, thickish when old; leaflets three, rhombic-ovate, unequally cut-toothed, the middle one wedge-shaped at the base; the crushed leaves are sweet-scented. Flowers appearing in April and May are pure yellow.

Preparation.—The fresh bark of the root is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole, pour it into a well-stoppered bottle and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Amount of drug power, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

RHUS GLABRUM, Linn.

Synonyms, *Rhus Carolinense*. *Rhus Elegans*.

Nat. Ord., Anacardiaceæ.

Common Names, Sumach. Smooth or Upland Sumach.

This species of *Rhus*, called variously *smooth sumach*, *Pennsylvania sumach*, and *upland sumach*, is an indigenous shrub from four to twelve feet or more in height, with a stem usually more or less bent, and divided into straggling branches, covered with a smooth, light gray, or somewhat reddish bark. The leaves are upon smooth petioles, and consist of many pairs of opposite leaflets, with an odd one at the extremity, all of which are lanceolate, acuminate, acutely serrate, glabrous, green on their upper surface, and whitish beneath. In the autumn their color changes to a beautiful red. The flowers are greenish-red, and disposed in large, erect, terminal compound thyrses, which are succeeded by clusters of small crimson berries, covered with a silky down. The berries have a sour, astringent, not unpleasant taste, and are often eaten by the country people with impunity. The shrub is found in almost all parts of the United States, growing in old neglected fields, along fences, and on the borders of woods. The flowers appear in July, and the fruit ripens in the early part of autumn.

Preparation.—The fresh bark is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, it is poured into a well-stoppered bottle, and allowed to remain eight days in a dark, cool place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

RHUS RADICANS, Linn.

Nat. Ord., Anacardiaceæ.

Common Names, Poison Ivy. Poison Vine.

It seems still a disputed question whether this differs from *Rhus Toxicodendron* in anything but habit, *Rhus Tox.* being a dwarf, erect shrub, while *Rhus Rad.* is a climber, with stem five to forty feet long, furnished with numerous radicles by which it adheres to trees and climbs up them like ivy. The leaves of *Rhus Rad.* are almost entire and glabrous.

Since *Rhus Tox.* and *Rhus Rad.* have been separately proved, and each proving contains symptoms peculiar to itself, it is much the best plan to make tinctures of each and keep them separate.

Preparation.—The fresh leaves, collected after sunset, on cloudy, sultry days, from shady places, in May and June, before the period of flowering, are chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are added, poured into a well-stoppered bottle, and allowed to stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{4}$.

Dilutions must be prepared as directed under Class III.

RHUS TOXICODENDRON, Linn.

Synonyms, *Rhus Humile*. *Rhus Pubescens*. *Rhus Toxicarium*. *Rhus Verrucosa*. *Vitis Canadensis*.

Nat. Ord., Anacardiaceæ.

Common Names, Mercury Vine. Poison Ash. Poison Oak. Poison Vine.

This shrub grows in fields, woods and along fences, all over North America, and has been introduced into Europe; it is one to three feet high, with leaflets angularly indented, and pubescent beneath; roots reddish, branchy; stems erect, bark striated, of a gray-brown, and full of numerous papillæ of a deep brown; leaves pinnated, long petioles, of a yellowish-green, veined; folioles almost three inches long, oval, incised, shining, and of a deep color above, pale green and pubescent beneath; flowers small, of a yellowish-green, in axillary spikes; fruit monosperm, oval, of a whitish-gray, marked with five furrows. The plant when wounded emits a milky juice, which becomes black on exposure to the air. The plant being very poisonous should be handled with great caution.

Preparation.—The fresh leaves, collected after sunset, on cloudy, sultry days, from shady places, in May and June, before the period of flowering, are chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are added, poured into a well-stoppered bottle, and allowed to stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{4}$.

Dilutions must be prepared as directed under Class III.

RHUS VENENATA, De Candolle.

Synonyms, *Rhus Vernicifera*. *Rhus Vernix*, *Linn.*

Nat. Ord., *Anacardiaceæ*.

Common Names, Poison Sumach. Poison Dogwood. Poison Elder. Poison Wood. Swamp Sumach. Varnish Tree.

This species grows in swampy localities in Canada and the United States. It is a shrub 12 to 18 feet high, and has many glabrous leaves with about 11 oval or obovate-oblong, abruptly pointed and entire leaflets. The fruit is yellowish.

Preparation.—The fresh leaves and bark are chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are added, poured into a well-stoppered bottle, and allowed to stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Amount of drug power, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

RICINUS COMMUNIS, Linn.

Synonyms, *Ricinus Africanus*. *Ricinus Europæus*. *Ricinus Lividus*. *Ricinus Viridis*.

Nat. Ord., *Euphorbiaceæ*.

Common Name, Castor Oil Plant.

The castor oil plant, or *palma Christi*, attains in the East Indies and Africa the character of a tree, and rises sometimes thirty or forty feet. In the temperate latitudes of North America and Europe it is annual. The following description applies to the plant as cultivated in cool latitudes. The stem is of vigorous growth, erect, round, hollow, smooth, glaucous, somewhat purplish towards the top, branching, and from three to eight feet or more in height. The leaves are alternate, petiole or supported upon footstalks inserted into their lower disk, palmate with seven or nine-pointed serrate lobes, smooth on both sides, and of a bluish-green color. The flowers are monœcious, stand upon jointed peduncles, and form a pyramidal terminal raceme, of which the lower portion is occupied by the male flowers, the upper by the female. Both are destitute of corolla. In the male flowers the calyx is divided into five oval, concave, pointed, reflected, purplish segments; and encloses numerous stamens, united into fasciculi at their base. In the female the calyx has three or five narrow lanceolate segments; and the ovary, which is roundish and three-sided, supports three linear, reddish stigmas, forked at their apex. The fruit is a roundish, glaucous capsule, with three projecting sides, covered with tough spines, and divided into three cells, each containing one seed, which is expelled by the bursting of the capsule. The seeds are about as large as a small bean, oval, compressed, obtuse at the extremities, very smooth and shining, and of a grayish or ash color, marbled with reddish-brown spots and veins. At one end of the seed is a small yellowish tubercle, from which an obscure longitudinal ridge proceeds to the opposite extremity, dividing the side upon which it is situated into two flattish

surfaces. It is from the seeds that the oil is extracted. This species of *Ricinus* is a native of the East Indies and Northern Africa, naturalized in the West Indies, and cultivated in various parts of the world, in few countries more largely than in the United States.

Preparation.—The ripe seeds are finely powdered and covered with five parts by weight of alcohol, and allowed to remain eight days in a well-stoppered bottle, in a dark, cool place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{10}$.

Dilutions must be prepared as directed under Class IV.

ROBINIA.

Synonyms, *Robinia Pseudo-acacia*, *Linn.* *Pseudo-acacia Odorata*.

Nat. Ord., Leguminosæ.

Common Names, Locust Tree. False Acacia. Yellow Locust.

The common locust tree is indigenous to the southern part of the United States, but is commonly cultivated and naturalized further north and in Europe. It is thorny when young, attains a height of sixty or eighty feet, but is smaller in northern localities, has a durable white wood and a brownish or gray, smooth, internally yellowish bark. Its leaves are impari-pinnate, the leaflets in from eight to twelve pairs, oval, obtuse, and smooth, and the fragrant whitish flowers in long, slender racemes. The legume is about three inches long, linear, flat, margined on the inner side, and contains about six blackish-brown small seeds. The root and inner bark have a sweetish taste.

Preparation.—The fresh bark of the young twigs is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, pour it into a well-stoppered bottle and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Amount of drug power, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

ROSA CENTIFOLIA, *Linn.*

Synonyms, *Rosa Mucosa*. *Rosa Provincialis*.

Nat. Ord., Rosaceæ.

Common Names, Cabbage Rose. Pale Rose. Hundred-Leaved Rose.

This well-known shrub is probably indigenous to Western Asia, and is cultivated in innumerable varieties in all countries. Its branches are covered with numerous nearly straight spines; the petioles and peduncles are nearly unarmed, but more or less clothed with glandular bristles, and the leaves have five or sometimes seven ovate or elliptic-oval serrate glandular, and beneath soft-hairy leaflets. The flowers are collected and deprived of the calyx and ovaries, the petals alone being employed. The petals are roundish-obovate, retuse at the apex or

almost obcordate, of a pink color, a delicious rose odor, and of a sweetish, somewhat bitter and slightly astringent taste. In drying they become brownish and less fragrant.

Preparation.—The fresh petals are pounded to a pulp, weighed, and mixed well with two-thirds by weight of alcohol, and pressed out in a piece of new linen. The tincture thus obtained is allowed to stand eight days, in a well-stoppered bottle in a dark, cool place, and then filtered.

Amount of drug power, $\frac{1}{4}$.

Dilutions must be prepared as directed under Class II.

ROSMARINUS.

Synonyms, *Rosmarinus Officinalis*, *Linn.* *Herba Anthos. Libanotis.*

Nat. Ord., Labiatae.

Common Names, Rosemary. Sea-dew.

This is an evergreen shrub, three or four feet high, with an erect stem, divided into many long, slender, ash-colored branches. The leaves are numerous, sessile, opposite, more than an inch long, about one-sixth of an inch broad, linear, entire, obtuse at the summit, folded backward at the edges, of a firm consistence, smooth and green on the upper surface, whitish and somewhat downy beneath. The flowers are pale blue or white, and disposed in opposite groups at the axils of the leaves, towards the ends of the branches. The seeds are four in number, oblong, and naked in the bottom of the calyx. The leaves have a strong balsamic odor, and a bitter, camphorous taste. The plant grows spontaneously in the countries which border on the Mediterranean, and is cultivated in the gardens of Europe and this country.

Preparation.—The fresh leaves and blossoms are chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole, pour it into a well-stoppered bottle and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{4}$.

Dilutions must be prepared as directed under Class III.

RUDBECKIA HIRTA, *Linn.*

Nat. Ord., Compositae.

Common Names, Cone-Flower. Great Hairy Rudbeckia.

This plant, one to two feet high, grows in dry soil, from Western New York to Wisconsin and southward. It is very rough and bristly-hairy throughout; stems simple or branched near the base, stout, naked above, bearing single large heads; leaves nearly entire; the upper oblong or lanceolate, sessile; the lower spatulate, triple-nerved, petioled; rays (about fourteen) more or less exceeding the involucre; chaff of the dull brown disk hairy at the tip, acutish. Flowers appear from June to August.

Preparation.—The fresh herb, in flower, is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole, pour it into a well-stoppered bottle and let it stand eight days, in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Amount of drug power, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

RUMEX.

Synonym, *Rumex Crispus*, Linn.

Nat. Ord., Polygonaceæ.

Common Names, Curled Dock. Garden Patience. Yellow Dock.

This plant is a native of Europe, introduced into this country, where it grows wild in pastures, dry fields, waste grounds, etc. From a deep spindle-shaped yellow root, its stem rises three to four feet high, which is quite smooth. Leaves with strongly wavy-curved margins, lanceolate, acute, the lower truncate or scarcely heart-shaped at the base; whorls crowded in prolonged wand-like racemes, leafless above; valves round-heart-shaped, obscurely denticulate or entire, mostly all of them grain-bearing.

Preparation.—The fresh root, gathered at time of flowering, is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole, pour it into a well-stoppered bottle and let it stand eight days in a dark, cool place. The tincture is separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

RUTA.

Synonyms, *Ruta Graveolens*, Linn. *Ruta Latifolia*.

Nat. Ord., Rutaceæ.

Common Names, Rue. Bitter Herb. Countryman's Treacle.

This perennial plant is a native of the south of Europe, but cultivated in our gardens. It is usually two or three feet high, with several shrubby branching stems, which, near the base, are woody and covered with a rough bark, but in their ultimate ramifications are smooth, green, and herbaceous. The leaves are doubly pinnate, glaucous, with obovate, sessile, obscurely crenate, somewhat thick and fleshy leaflets. The flowers are yellow and disposed in a terminal branched corymb upon subdividing peduncles. The calyx is persistent, with four or five acute segments; the corolla consists of four or five concave petals, somewhat sinuated at the margin. There are usually ten stamens, but sometimes only eight. The leaves have a strong, disagreeable odor, especially when rubbed. Their taste is bitter, hot, and acrid. When recent, and in full vigor, they have so much acrimony as to inflame and even blister the skin, if much handled.

Preparation.—The fresh herb, gathered shortly before blooming, is chopped and pounded to a fine pulp and pressed out in a piece of new linen. The expressed juice is then, by brisk agitation, mingled with an equal part by weight of alcohol. This mixture is allowed to stand eight days in a well-stoppered bottle in a dark, cool place, and then filtered.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class I.

SABADILLA.

Synonyms, *Veratrum Sabadilla*, *Schlecht.* *Sabadilla Officinarum*, *Brandt.* *Asagraea Officinalis*, *Lindley.* *Schönocaulon Officinale*, *Gray.* *Hordeum Causticum.* *Melanthium Sabadilla.*

Nat. Ord., Melanthaceæ.

Common Names, Cevadilla. Indian Caustic Barley.

The cevadilla is a bulbous plant with linear grass-like radical leaves, and a slender scape, bearing a narrow, spike-like raceme, about twelve or eighteen inches long, of greenish-yellow flowers, of which the lower ones only are fertile. It is indigenous to the eastern section of Mexico, also to Guatemala and Venezuela. The plant growing in the latter country differs in some respects from the Mexican cevadilla, but no difference is observed in the seeds. The seeds alone are usually exported from Venezuela, and the ripe capsules from Mexico. The fruit consists of three slightly-spreading, brownish, papery foliicles which are about half an inch long and are either empty or contain from two to six seeds each. These are from one-sixth to one-fourth of an inch long, narrow-oblong or lance-linear, one side usually flattened and angular, the lower end rounded and the apex attenuate and rather beaked; the testa is rugosely wrinkled, somewhat shining, of a brownish-black color, and incloses a whitish, oily albumen and at the base a small linear embryo. The seeds are inodorous, and have a bitter and persistently acrid taste.

Preparation.—The seeds taken out of the capsules are finely powdered, covered with five parts by weight of alcohol, and allowed to remain eight days in a well-stoppered bottle in a dark, cool place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{16}$.

Dilutions must be prepared as directed under Class IV.

SABINA.

Synonyms, *Juniperus Sabina*, *Linn.* *Sabina Officinalis*, *Garcke.*

Nat. Ord., Coniferae.

Common Name, Savine.

The savine is a native of the south of Europe and the Levant. It is an evergreen tree-like shrub from three to fifteen feet high, with numerous erect, pliant branches, much subdivided. The bark of the young branches is light green, that of the trunk rough, and reddish-

brown. The leaves, which completely invest the younger branches, are numerous, small, erect, firm, smooth, pointed, dark green, glandular in the middle, opposite, and imbricated in four rows. The flowers are male and female on different trees. The fruit is a blackish-purple berry, of an ovoid shape, marked with tubercles and the remains of the calyx and petals, and containing three seeds. The leaves are of extremely strong, nauseous-balsamic odor, and bitter acrid taste.

Preparation.—The fresh tops, collected of the younger branches in April, are chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having thoroughly mixed the pulp with one-sixth part of it, the rest of the alcohol is added. After stirring the whole, pour it into a well-stoppered bottle, and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{4}$.

Dilutions must be prepared as directed under Class III.

SACCHARUM OFFICINARUM.

Synonym, Saccharum Album.

Nat. Ord., Graminaceæ.

Common Names, Sugar Cane. White Sugar.

Origin.—The sugar cane appears to have been indigenous to India and other parts of Southern and Eastern Asia, and has been cultivated from time immemorial. At present it is not known in the wild state; but it is raised in most tropical and sub-tropical countries, and in many of them for the production of sugar. It is a perennial, and produces a stem which is from eight to twelve feet high, one to two inches thick, cylindrical, jointed, and, with the exception of the flowering tops, which are hollow, filled with a juicy pith. The leaves are four to five feet long, two inches wide, and linear; and the flowering panicles large, pyramidal, and with spreading branches. Several varieties are known, differing chiefly in the color and hairiness of the stem. Recently collected sugar-cane yields by crushing and expressing about 80 per cent. of juice, which contains from 70 to 84 per cent. of water, 16 to 20 per cent. of sugar, 0.3 to 0.4 per cent. of mucilaginous, resinous, fatty and albuminous matters and nearly the same amount of salts.

Preparation.—The ripened stems are chopped and pounded to a pulp and weighed. Then two parts by weight of dilute alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole, and having poured it into a well-stoppered bottle, it is allowed to stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power, $\frac{1}{4}$.

Dilutions must be prepared as directed under Class III.

SALIX ALBA, Linn.

Nat. Ord., Salicaceæ.

Common Name, White Willow.

The willows form a large genus, which is mostly confined to the northern temperate zone, and with some species extends into the arctic regions. They are either trees or shrubs, with flexible branches, and have alternate, short petioled, and mostly more or less lanceolate, entire or finely serrate leaves, with small or conspicuous stipules. The flowers are dioecious, in cylindrical catkins, each bract being one-flowered and without other floral envelopes. The fruit is one-celled and two-valved capsule, and contains numerous minute seeds, which are furnished with a silky down. Most of the species are exceedingly variable in some of their characters, and all grow in moist localities, along streams, etc. The species *S. alba* is common in Europe, and is frequently cultivated; it has been to some extent naturalized, in North America. It grows to the height of sixty or eighty feet, and belongs to the group of *crack willows*, which are characterized by having their branches brittle at the base.

Preparation.—The fresh bark is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole, pour it into a well-stoppered bottle, and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Amount of drug power, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

SALIX NIGRA, Marsh.

Nat. Ord., Salicacæ.

Common Name, Black Willow.

This tree grows from fifteen to twenty feet high, frequently along streams, especially southward. It has a rough black bark. Leaves narrowly lanceolate, pointed and tapering at each end, serrate, smooth (except on the petioles and midrib), and green on both sides; stipules small, deciduous; scales short and rounded, woolly; glands large, of the sterile flowers cleft, of the sterile kidney-shaped; stamens three to six; pods mostly short-ovate.

Preparation.—The fresh bark is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole, pour it into a well-stoppered bottle, and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Amount of drug power, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

SALIX PURPUREA, Linn.

Nat. Ord., Salicacæ.

Common Name, Purple Willow.

This species is a native of Europe, where it grows in low grounds. Its twigs are olive-colored or reddish. Leaves oblanceolate, pointed,

smooth, minutely and sparingly toothed; catkins cylindrical; scales round and concave, very black; stigmas nearly sessile; ovary sessile.

Preparation.—The fresh bark is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole, pour it into a well-stoppered bottle, and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Amount of drug power, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

SALVIA OFFICINALIS, *Linn.*

Nat. Ord., Labiatae.

Common Name, Sage.

Sage is a suffruticose perennial, indigenous to Southern Europe, and extensively cultivated in England, France, and Germany, and in gardens in the United States. The stem is one or two feet high, woody at the base, much branched, quadrangular, and whitish pubescent above. The leaves are opposite, petiolate, two or three inches long, ovate or lance-oblong, finely crenulate on the margin, wrinkled, grayish-green, and beneath soft hairy. The lower leaves are sometimes auriculate at the base, the upper ones smaller and nearly sessile. The flowers are in small cymes in the axils of the upper leaves or bracts, have a tubular, bell-shaped, bilabiate, brownish, pubescent calyx, with mucronate divisions, and a violet-blue, bilabiate corolla, with a short tube, a depressed, helmet-shaped upper lip, three-lobed, spreading lower lip, and two stamens. All parts of the plant are more or less glandular, and have a peculiar, strong, aromatic odor, and a warm, bitterish, and somewhat astringent taste.

Preparation.—The fresh leaves are chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole, pour it into a well-stoppered bottle, and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Amount of drug power, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

SAMBUCUS.

Synonym, *Sambucus Nigra, Linn.*

Nat. Ord., Caprifoliaceae.

Common Names, European Elder. Bore Tree.

It extends throughout the greater portion of Europe, Southern Siberia, and Northern Africa. It is a shrub or small tree, has the leaflets ovate-oblong and acute, and the flowers in smaller compound cymes than the species *Sambucus Canadensis*; otherwise the two species resemble each other very closely.

Preparation.—Equal parts of the fresh leaves and flowers are chopped and pounded to a pulp, and pressed out in a piece of new linen. The expressed juice is then, by brisk agitation, mingled with an equal part by weight of alcohol. This mixture is allowed to stand eight days, in a well-stoppered bottle, in a dark, cool place, and then filtered.

Amount of drug power, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class I.

SAMBUCUS CANADENSIS, Linn.

Nat. Ord., Caprifoliaceæ.

Common Name, Elder.

The American elder is suffruticose, attaining a height of eight or ten feet, and grows in moist thickets and on the banks of streams throughout a great portion of North America. It has opposite, mostly smooth leaves, with from seven to eleven short-stalked, oblong, pointed, serrate leaflets, the lower pair of which is frequently three-parted; and juicy, purplish-black, drupaceous fruits, containing three one-seeded hard nutlets, and having an acidulous and sweetish taste. The flowers are in large, level-topped cymes, which terminate the small branches, and are five-branched below and forked above. The marginal flowers are occasionally radiate; all have a superior calyx, with five minute teeth, a wheel-shaped, cream-colored or whitish corolla, with a short tube, and a spreading, five-lobed limb, and five stamens which are inserted between the obtuse corolla lobes. The flowers appear in June, and have in their fresh state a peculiar, rather disagreeable odor, which becomes more pleasant and sweetish on drying.

Preparation.—Equal parts of the fresh leaves and flowers are chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole, pour it into a well-stoppered bottle, and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Amount of drug power, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

SAMBUCUS NIGRA e CORTICE.

Bark of *Sambucus Nigra* (European Elder).

Preparation.—The fresh inner bark of the young twigs is chopped and pounded to a pulp and weighed. Then two-thirds by weight of alcohol are taken, mixed well with the pulp, and strained through a piece of new linen. The tincture thus obtained is allowed to stand eight days in a well-stoppered bottle, in a dark, cool place, and then filtered.

Amount of drug power, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class II.

SANGUINARIA.

Synonyms, *Sanguinaria Canadensis*, Linn. *Sanguinaria Acaulis*. *Sanguinaria Vernalis*.

Nat. Ord., Papaveraceæ.

Common Names, Bloodroot. Indian Paint. Pauson. Tetterwort. Turmeric. Puccoon.

This is an indigenous, perennial plant. The root (rhizome) is horizontal, abrupt, often contorted, about as thick as the finger, one to three inches long, fleshy, of a reddish-brown color on the outside, and brighter red within. It is furnished with numerous slender radicles, and makes offsets from the sides, which succeed the old plant. From the end of the root arise the scape and leafstalks, surrounded by the large sheaths of the bud. These spring up together, the folded leaf enveloping the flower-bud, and rolling back as the latter expands. The leaf, which stands upon a long channeled petiole, is reniform, somewhat heart-shaped, deeply lobed, smooth, yellowish-green on the upper surface, paler or glaucous on the under, and strongly marked by orange-colored veins. The scape is erect, round, and smooth, rising from a few inches to a foot, and terminating in a single flower. The calyx is two-leaved and deciduous. The petals, varying from seven to fourteen, but usually about eight in number, are spreading, ovate, obtuse, concave, mostly white, but sometimes slightly tinged with rose or purple. The stamens are numerous, with yellow filaments shorter than the corolla, and orange oblong anthers. The ovary is oblong and compressed, with a sessile, persistent stigma. The capsule is oblong, acute at both ends, two-valved, and contains numerous oval, reddish-brown seeds. The whole plant is pervaded by an orange-colored sap, which flows from every part when broken, but is of the deepest color in the root. The bloodroot is one of the earliest and most beautiful spring flowers of North America. It grows abundantly throughout the United States, delighting in loose, rich soils, and shady situations, and flowering in March and April. After the fall of the flower, the leaves continue to grow, and, by the middle of summer, have become so large as to give the plant an entirely different aspect.

Preparation.—The fresh root is chopped and pounded to pulp and weighed. Then two parts by weight of alcohol are taken, and after thoroughly mixing the pulp with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole, pour it into a well-stoppered bottle and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

SANTONINUM.

Synonyms, Santonin. Santoninic Acid.

Formula, $C_{15}H_{18}O_3$.

Molecular Weight, 246.

Preparation of Santonin.—Take of santonica in moderately

coarse powder, forty-eight troy ounces; lime recently slaked and in fine powder, eighteen troy ounces; animal charcoal in fine powder, diluted alcohol, acetic acid, alcohol, each a sufficient quantity. Digest the santonica and lime with twelve pints of diluted alcohol for twenty-four hours, and express. Repeat the digestion and expression twice with the residue, using the same quantity of diluted alcohol. Mix the tinctures and reduce the mixture to eight pints by distilling off the alcohol. Then, having filtered, and evaporated to one-half, gradually add acetic acid until in slight excess, stirring during the addition, and set the whole aside for forty-eight hours. Place the resulting crystalline mass upon a funnel loosely stopped, wash it with water, and dry it. Next, boil the dry residue with ten times its weight of alcohol, and having digested the tincture for several hours with animal charcoal, filter it while hot, and add enough hot alcohol, through the filter, to wash the charcoal thoroughly; then set it aside in a dark place to crystallize. Lastly, dry the crystals on bibulous paper in the dark, and keep them in a well-stoppered bottle, protected from the light. The yield is $1\frac{1}{2}$ to nearly 2 per cent.

Properties.—Santonin crystallizes in flat, rhombic prisms, which are colorless, of a pearly lustre, of a slightly bitter taste. When heated to about 170° C. (338° F.) it melts to a colorless liquid, which, on being slowly cooled, becomes again crystalline; but, when rapidly cooled, usually remains amorphous and gum-like until after it has been moistened with alcohol, ether, or acetic acid, or has been heated again to a little over 40° C. (104° F.). It is nearly insoluble in cold water, and requires 250 parts of boiling water for solution. Trommsdorff found santonin to be dissolved at 17.5° C. (63.5° F.) in 43 parts, and at 80° C. (176° F.) in 2.7 parts of alcohol, spec. grav. .848, while at the same temperatures 280 and 10 parts of an alcohol having the density .928 were necessary. Santonin dissolves in 72 parts of cold and 42 parts of boiling ether, and in 4.35 parts of chloroform; it is likewise soluble in strong acetic acid, in volatile oils, and in warm olive oil. Santonin should be kept excluded from the light, or in yellow bottles. In the sunlight it acquires a yellow color, and, according to Sestini (1864, 1865), is converted into *photo-santonin acid*, $C_{23}H_{34}O_6$, which is more freely soluble in simple solvents, has a bitter taste, and when pure, is colorless and inodorous; the coloring matter produced at the same time is of a resinous nature. Santonin is transiently colored red by hot alkalis and alkaline earths, and forms with them soluble salts, the solution of which yields insoluble precipitates with the salts of most heavy metals. According to Hesse (1874), these compounds are true salts, and, on liberating from them the *santonin acid*, it may be obtained from the hot aqueous solution in white rhombic crystals, which do not turn yellow in the light, are sparingly soluble in cold water, and have the composition $C_{15}H_{20}O_4$. The officinal santonin is, therefore, *santonin anhydrid*.

Impurities.—Santonin has been sometimes adulterated with *boracic acid*, which imparts to the flame of alcohol a green color, and, on being heated upon platinum foil, is left behind as a glass-like mass, the solu-

tion of which turns tumeric paper brown. *Strychnia* has been mistaken for santonin; it is readily detected by the bluish-purple color produced by sulphuric acid and a little potassium bichromate. *Picric acid*, which has been mistaken for santonin colored yellow by light, is very bitter, and may be recognized by the behavior described in article on picric acid.

Preparation for Homœopathic Use.—One part by weight of pure santonin is dissolved in fifty parts by weight of alcohol.

Amount of drug power, $\frac{1}{100}$.

Dilutions must be prepared as directed under Class VI— β .

Triturations are prepared as directed under Class VII.

SAPO DOMESTICUS.

Synonym, Sapo Animalis.

Common Name, Curd Soap.

It is made with soda and a purified animal fat, consisting principally of stearin.

When it is dissolved in eight parts of boiling alcohol, the solution, after cooling, forms a translucent, jelly-like mass.

Preparation for Homœopathic Use.—One part by weight of curd soap is dissolved in fifty parts by weight of alcohol.

Amount of drug power, $\frac{1}{100}$.

Dilutions must be prepared as directed under Class VI— β .

Triturations may be prepared as directed under Class VII.

SARRACENIA PURPUREA, Linn.

Synonyms, Sarazina Gibbosa. *Sarracenia Heterophylla*.

Nat. Ord., Sarraceniaceæ.

Common Names, Eve's Cup. Fly Trap. Pitcher Plant. Side-saddle Flower. Huntsman's Cup.

This plant grows in boggy places from Canada southward. The rhizome is oblique, conical, about an inch or more long, of a reddish-brown color externally, and brownish-white internally, has numerous thin, nearly simple, toughish rootlets attached. The leaves are radical, six or eight inches long, pitcher-shaped, most inflated near the middle, curved, broadly winged, with an erect, roundish, heart-shaped hood. The curious leaves are usually half filled with water and drowned insects; the inner face of the hood is clothed with stiff bristles pointed downward. The flower is nodding, globose, and deep purple, and has fiddle-shaped petals. It is difficult to fancy any resemblance between its shape and a side-saddle, but it is not very unlike a pillion. The plant flowers in June.

Preparation.—The fresh plant, gathered when coming into flower, is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole, pour it into a well-stoppered bottle, and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{4}$.

Dilutions must be prepared as directed under Class III.

SARSAPARILLA.

Synonyms, *Smilax Officinalis*, *Humboldt*, *Bonpland* and *Kunth*.
Smilax Medica, *Schlecht.* Sarsa.

Nat. Ord., Smilacæ.

Common Name, Wild Liquorice.

In the present state of our knowledge, it is impossible to decide with certainty from what species the several commercial varieties of the drug are respectively derived. This much is certain, that they do not proceed from the same plant. All of them are climbing or trailing plants, with prickly stems; a character expressed in the name of the medicine, which is derived from two Spanish words *zarza parilla*, signifying a small thorny vine. The medicinal species of *Smilax* grow in Mexico, Guatemala, and the warm latitudes of South America. The roots are very long and slender, and originate in great numbers from a common head or rhizome, from which the stems of the plant rise. The whole root with the rhizome is usually dug up, and as brought into market exhibits not unfrequently portions of the stems attached, sometimes several inches in length. The sarsaparilla of commerce comes from different sources, and is divided into varieties according to the place of collection or shipment. Honduras sarsaparilla is the variety most used in this country. It comes in bundles two or three feet long, composed of several roots folded lengthwise, and secured in a compact form by a few circular turns. The color of the roots externally is a dirty grayish or reddish-brown; and the cortical portion beneath the epidermis often appears amylaceous when broken. It is without odor; its taste is mucilaginous, feebly bitter, and faintly acid.

Preparation.—The dried root of the Honduras variety is finely powdered and covered with five parts by weight of alcohol, and allowed to remain eight days in a well-stoppered bottle, in a dark, cool place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{16}$.

Dilutions must be prepared as directed under Class IV.

Triturations of the dried root-bark, as directed under Class VII, are to be preferred.

SASSAFRAS.

Synonyms, *Sassafras Officinale*, *Nees*. *Laurus Sassafras*, *Linn.*

Nat. Ord., Lauracæ.

Common Name, Sassafras.

Sassafras is indigenous to North America from Canada southward to the Gulf of Mexico. It remains shrubby in the North, but attains a height of forty to fifty feet in the Southern States. The trunk has a rough, furrowed, gray bark, but the young branches are of a brown color. The wood is very strong and durable. The leaves are alternate,

petiolate, three to six inches long, bright green and smooth above, downy beneath, especially when young; broadly ovate in shape, and entire or some of them two or three-lobed, all, however, with a wedge-shaped base. The greenish-yellow flowers appear before the leaves in March and April or May, are dioecious, grow in downy racemes, and have linear bracts at the base and a deeply six-lobed perianth. The male flowers have nine stamens in three rows, and the female flowers six short imperfect stamens. The fruit is a dark blue, oval or ovoid, one-seeded drupe, supported in the base of the perianth and on the thickened clavate reddish peduncle. The flowers have an agreeable although not a strong odor; the bark of the branches is aromatic, but differs in flavor from that of the root. Only the root-bark is employed. It is deprived of the dark gray, inert, corky layer, is nearly white in the fresh state, and is seen in commerce in irregular flattish or curved pieces, usually two or three inches in length and width. It is of a bright rust brown color, on the inner surface finely striate and glistening, rather soft and fragile, breaks with a short corky fracture, and on transverse section is radially striate. It has a strong fragrant odor, and a sweetish, aromatic, somewhat astringent taste.

Preparation.—The dried root-bark, finely powdered, is covered with five parts by weight of alcohol, and allowed to remain eight days in a well-stoppered bottle in a dark, cool place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{10}$.

Dilutions must be prepared as directed under Class IV.

SCILLA.

Synonyms, *Scilla Maritima*, Linn. *Cepa Marina*. *Ornithogalum Maritimum*. *Pancratium Verum*. *Sancratium*. *Squilla Hispanica*. *Urginea Maritima*.

Nat. Ord., Liliaceæ.

Common Names, Squill. Sea Onion.

This is a perennial plant, with fibrous roots proceeding from the bottom of a large bulb, which is pear-shaped, usually larger than a man's fist, sometimes as large as a child's head; this bulb sends forth several long, lanceolate, pointed, somewhat undulated, shining, deep green leaves. From the midst of the leaves a round, smooth, succulent flower-stem rises, from one to three feet high, terminating in a long, close spike of whitish flowers. These are destitute of calyx, and stand on purplish peduncles, at the base of each of which is a linear, twisted, deciduous floral leaf. Corolla six-petaled, spreading, deciduous. Filaments thread-like. The squill grows on the sandy shores of the Mediterranean, from which only the bulbs covered with red skins should be gathered.

Preparation.—As the squill has no volatile constituent that is lost in drying, we select from the dry squills, the whitest and most fleshy, and chop and pound them into fine pieces and weigh. Then cover with five parts by weight of dilute alcohol, and pour into a well-stoppered bottle, where it is allowed to remain eight days in a dark, cool

place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{16}$.

Dilutions must be prepared as directed under Class IV, except that dilute alcohol be used for the 2x and 1 dilutions.

SCROPHULARIA NODOSA, *Linn.*

Synonyms, *Galiopsis*. *Ocimastrum*.

Nat. Ord., Scrophulariaceæ.

Common Name, Carpenter's Square. Figwort. Heal All. Scrofula Plant.

Figwort is a perennial herb growing in damp places in Europe and North America. The American plant is usually taller, growing to the height of four or five feet, and has an obtusely angled stem, but otherwise agrees closely with the European plant; it was formerly regarded as a distinct species, as *Scrophularia Marilandica*, *Linn.* The plant has a horizontal, branching, fleshy rhizome, to which numerous oblong or oval tubers of the thickness of a thumb are attached. The leaves are opposite, petiolate, ovate-oblong, rounded or heart-shaped at the base, and cut-serrate on the margin. The flowers are in a terminal loose panicle, have a greenish-brown, tubular-glabose, five-lobed corolla with four stamens, and produce a two-celled many-seeded capsule. The fresh plant, bruised, has an unpleasant odor, and a nauseous, bitter, and acrid taste. The flowers appear from June to August.

Preparation.—The fresh plant, gathered before the development of the blossoms, is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole, pour it into a well-stoppered bottle and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{4}$.

Dilutions must be prepared as directed under Class III.

SCUTELLARIA.

Synonym, *Scutellaria Lateriflora*, *Linn.*

Nat. Ord., Labiatae.

Common Names, Sculcap. Blue Pimpernel. Hood Wort.

This is an indigenous perennial herb, with a stem erect, much branched, quadrangular, smooth, and one or two feet high. The leaves are ovate, acute, dentate, subcordate upon the stem, opposite, and supported upon long petioles. The flowers are small, of a pale blue color, and disposed in long, lateral, leafy racemes. The tube of the corolla is elongated, the upper lip concave and entire, the lower three-lobed. The plant grows in moist places by the sides of ditches and ponds in all parts of the Union, flowering in July and August.

Preparation.—The whole fresh plant is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken,

and after mixing the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole, pour it into a well-stoppered bottle, and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

SECALE CORNUTUM.

Synonyms, Ergota. Acinula Clavus. Claviceps Purpurea. Spermoidia Clavus.

Nat. Ord., Fungi.

Common Names, Cockspur. Ergot. Horned Rye. Spurred Rye.

This morbid alteration of the seed-bud of rye (and several other cerealia) has been attributed to various causes.

According to De Candolle, who calls it *Sclerotium clavus*, this alteration is caused by a fungus which prevents the development of the grain from the commencement, and grows up in its stead. This opinion is supported by the circumstances attending the appearance and growth of the morbid grain; it occurs principally in fertile years when hot weather frequently alternates with warm rains. It is seated between the awns as a cylindrical, somewhat curved, angular body, longitudinally rugose, and frequently resembling the fenugreek, from one-half to one inch long, of a deep brown-violet without, and a yellow-white, and sometimes a violet-white within, viscid, having an offensive, rancid smell, and a flat, sweetish taste.

Preparation.—The fresh ergot, gathered in a moist, warm summer, shortly before harvest, is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole, pour it into a well-stoppered bottle, and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

SEDINHA.

This is a herbaceous plant, with a slender, round and pubescent stem; the leaves are opposite, lanceolate and very sharp; their upper surface is hairy and of a darker green than their lower surface, which is covered with long, silky hairs. This plant is quite common in the neighborhood of Rio Janeiro.

Preparation.—The fresh leaves are chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole, pour it into a well-stoppered bottle, and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Amount of drug power, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

SEDUM ACRE, *Linn.*

Synonym, *Sempervivum Minoris*.

Nat. Ord., *Crassulaceæ*.

Common Name, Mossy Stone-crop.

This little moss-like, spreading plant is indigenous to Europe, where it grows in dry fields and on old walls; it is cultivated in gardens, and runs wild in some places in North America. Its leaves are one-eighth of an inch long, alternate, nearly imbricate, in about six spirally turned rows, ovate, thick, convex on the back, and smooth. The flowers are on one side of the branched inflorescence, forming scorpioid cymes, and have four or five yellow petals, the same number of pistils, and twice that number of stamens. The plant is inodorous, and has a mucilaginous and acrid taste.

Preparation.—The fresh plant, in flower, is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole, pour it into a well-stoppered bottle, and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

SELENIATE OF SODA.

Fuse equal parts of nitrate of soda and selenious acid, then crystallize.

Properties.—Seleniate of soda crystallizes without water, like the dry sulphate of soda, and shows the same peculiar solubility in water, being most soluble at 91.4°.

Preparation for Homœopathic Use.—One part by weight of seleniate of soda is dissolved in nine parts by weight of distilled water.

Amount of drug power, $\frac{1}{16}$.

Dilutions must be prepared as directed under Class V—*a*.

SELENIUM.

Symbol, *Se*.

Atomic Weight, 79.

Origin.—This is a very rare substance, much resembling sulphur in its chemical relations, and found in association with that element in some few localities, or replacing it in certain metallic combinations, as in the lead selenide of Clausthal in the Hartz.

Properties.—Selenium is a reddish-brown solid body, somewhat translucent, and having an imperfect metallic lustre. Its specific gravity, when rapidly cooled after fusion, is 4.3. At 100°, or a little above,

it melts and boils. It is insoluble in water, and exhales, when heated in the air, a peculiar and disagreeable odor, which has been compared to that of decaying horse-radish; it is insoluble in alcohol, but dissolves slightly in carbon bisulphide, from which solution it crystallizes.

Preparation for Homœopathic Use.—Selenium is triturated as directed under Class VII.

SEMPERVIVUM TECTORUM, *Linn.*

Nat. Ord., Crassulaceæ.

Common Name, Houseleek.

It is indigenous to the Alps, but now grows spontaneously throughout Europe on roofs and old walls. It has numerous fleshy rosulate radical leaves, which are about an inch long, obovate in shape, of a green color, and on the margin stiff-hairy, and often of a brownish or reddish color. The flowers are rose-colored and purplish. The leaves have an acidulous taste.

Preparation.—The fresh leaves, gathered before the development of the blossoms, are chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole, pour it into a well-stoppered bottle and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

SENECIO AUREUS, *Linn.*

Synonym, *Senecia Gracilis*, *Linn.*

Nat. Ord., Compositæ.

Common Names, Golden Ragwort. Squaw-Weed.

This perennial has an erect, smoothish, striate stem, one or two feet high, flobose-wooly when young, simple or branched above, terminating in a kind of umbellate, simple or compound corymb. The radical leaves are simple and rounded, the larger mostly cordate, crenate-serrate, and long petioled; the lower cauline leaves lyre-shaped; the upper ones few, slender, cut-pinnatifid, dentate, sessile or partly clasping; the terminal segments lanceolate; peduncles sub-umbellate, and thick upwards; corymbs umbel-like. Rays from eight to twelve, four or five lines long, spreading. Flowers golden yellow. Scales linear, acute, and purplish at the apex. The root is horizontal, from half an inch to six or eight inches long, and about two lines in diameter, reddish or purplish externally, and white-purplish internally, with an aromatic taste, and having scattered fibres. It is found growing on the banks of creeks and low marshy ground throughout the north and west of the United States. *Senecio Gracilis* differs only in being more slender and growing in rocky places.

Preparation.—The entire fresh plant when in bloom, is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth

part of it, the rest of the alcohol is added. After having stirred the whole, pour it into a well-stoppered bottle and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

SENEGA.

Synonym, *Polygala Senega*, *Linn.*

Nat. Ord., Polygalaceæ.

Common Names, Rattlesnake Milkwort. Seneca. Seneca Snake-root.

This unostentatious plant has a perennial branching root, from which several erect, simple, smooth, round, leafy stems annually arise, from nine inches to a foot in height. The stems are occasionally tinged with red or purple below, but are green near the top. The leaves are alternate or scattered, lanceolate, pointed, smooth, bright green on the upper surface, paler beneath, and sessile or supported on very short footstalks. The flowers are small and white, and form a close spike at the summit of the stem. The calyx is their most conspicuous part. It consists of five leaflets, two of which are wing-shaped, white, and larger than the others. The corolla is small and closed. The capsules are small, much compressed, obcordate, two-valved and two-celled, with two oblong-ovate, blackish seeds, pointed at one end. It grows wild in all parts of the United States, but most abundantly in the southern and western sections.

Preparation.—The dried root, finely powdered, is covered with five parts by weight of alcohol, poured into a well-stoppered bottle, and allowed to remain eight days, at a moderate temperature in a dark place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{10}$.

Dilutions must be prepared as directed under Class IV.

SENNA.

Synonyms, *Cassia Acutifolia Delille.* *Cassia Lanceolata, Nectoux.*

Nat. Ord., Leguminosæ.

Common Name, Senna.

This is an undershrub, two or three feet high, with a straight, woody, branching, whitish stem. The leaves are alternate and pinnate, with glandless footstalks, and two small, narrow, pointed stipules at the base. The leaflets, of which from four to six pairs belong to each leaf, are almost sessile, oval-lanceolate, acute, oblique at their base, nerved, from half an inch to an inch long, and of a yellowish-green color. The flowers are yellow, and in axillary spikes. The fruit is a flat, elliptical, obtuse, membranous, smooth, grayish-brown, bivalvular legume, about an inch long and half an inch broad, scarcely, if at all, curved, and divided into six or seven cells, each containing a hard, heart-shaped,

ash-colored seed. *Cassia acutifolia* grows wild in great abundance in Upper Egypt, Nubia, Sennaar, and other parts of Africa. This species furnishes the greater part of the variety known in commerce by the name of Alexandria senna.

Preparation.—The dried leaves, finely powdered, are covered with five parts by weight of alcohol, poured into a well-stoppered bottle and allowed to remain eight days in a dark, cool place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{16}$.

Dilutions must be prepared as directed under Class IV.

SEPIA.

Synonyms, *Sepia Octopus*. *Sepia Succus*. *Sepia Officinalis*, *Linn.*
Class, Mollusca.

Nat. Ord., Dibranchiata.

Family, Sepiadæ.

Common Names, Squid. Cuttle-fish.

Inky juice of the cuttle-fish.

The cuttle-fish is a cephalopodous mollusc, without an external shell, from one to two feet long, soft gelatinous, of a brown color, verging on the red, and spotted black; its body is rounded, elliptical, and enclosed in a sac furnished with a fleshy fin on both sides along its whole length. The head is separated from the body by a neck, is salient and round, and provided with salient eyes of a lively red. The mouth is surrounded by ten arms which are pedunculated, very large, and furnished with suckers. The cuttle-fish ink is an excretory liquor, contained in a bag, about the size and shape of a grape, in the abdomen of the sepia; it is blackish-brown, and is used by these animals to darken the water when they wish to catch their prey or escape from their pursuers. The ink-bag is found separate from the liver, and deeper in the abdominal cavity; its external duct ends in a kind of funnel, and opens near that part of the neck where the anus of the animal is situated. In the back of the fish is found an oval-oblong, moveable bone, from five to ten inches long, and from one and a half to three inches broad, somewhat convex, cretaceous and spongy. The cuttle-fish inhabits the seas of Europe, especially the Mediterranean. Sepia in a dry state, as it occurs in trade, appears to be a dark blackish-brown, solid mass, of shining, conchoidal, very brittle fracture, having a faint smell of seafish, nearly no taste at all, scarcely dying the saliva. It is inclosed in little skins and is of the shape of grapes. The artificial sepia (Indian ink) used in drawing should not be used.

Preparation.—The pure, dry, genuine sepia is covered with five parts by weight of dilute alcohol, poured into a well-stoppered bottle, and allowed to remain eight days in a dark, cool place, being shaken twice a day. The tincture is then poured off, strained, and filtered.

Drug power of tincture, $\frac{1}{16}$.

Dilutions must be prepared as directed under Class IV.

Triturations of genuine sepia are prepared, freed from its skinny

envelope, as directed under Class VII.

Triturations of this remedy are preferable.

SERPENTARIA.

Synonym. *Aristolochia Serpentaria*, Linn.

Nat. Ord., Aristolochiaceæ.

Common Name, Virginia Snakeroot. *Serpentaria*.

This species of *aristolochia* is an herbaceous plant, with a perennial root, which consists of numerous slender fibres proceeding from a short horizontal caudex. Several stems often rise from the same root. They are about eight or ten inches in height, slender, round, flexuose, jointed at irregular distances, and frequently reddish or purple at the base. The leaves oblong-cordate, acuminate, entire, of a pale yellowish-green color, and supported on short petioles at the joints of the stem. The flowers proceed from the joints near the root, and stand singly on long, slender, round, jointed peduncles, which are sometimes furnished with one or two small scales, and bend downwards so as nearly to bury the flower in the earth or decayed leaves. There is no calyx. The corolla is purple, monopetalous, tubular, swelling at the base, contracted and curved in the middle, and terminating in a labiate border with lanceolate lips. The anthers—six or twelve in number—are sessile, attached to the under part of the stigma, which is roundish, divided into six parts, and supported by a short fleshy style upon an oblong, angular, hairy, inferior germ. The fruit is a hexangular, six-celled capsule, containing several small flat seeds. The plant grows in rich shady woods throughout the Middle, Southern and Western States, abounding in the valley of the Ohio, and in the mountainous regions of our interior. It flowers in May and June.

Preparation.—The dried root, finely powdered, is covered with five parts by weight of alcohol, and allowed to remain eight days in a well-stoppered bottle, in a dark, cool place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{10}$.

Dilutions must be prepared as directed under Class IV.

SILICA.

Synonyms, Silicea. Silicea Terra. Silex. Acidum Silicum.

Common Names, Pure Flint. Silicious Earth.

Preparation of Silica—Hahnemann directs this to be prepared as follows: "Take half an ounce of mountain-crystal and expose it several times to a red heat, or take pure white sand and wash it with distilled vinegar; when washed mix it with two ounces of powdered natrum, melt the whole in an iron crucible until effervescence has ceased and the liquefied mass looks clear and smooth, which is then to be poured upon a marble plate. The limpid glass which is thus obtained is to be pulverized while warm, and to be filled in a vial, adding four times its own weight of distilled water (the vial being exactly filled to a level and a stopper being put in immediately). This

mixture forms a solution which remains always clear; but upon pouring it into an open vial, which is loosely covered with paper, it becomes decomposed, and the snow white silica separates from the natrum and falls to the bottom of the vial."

The following process, which does not differ in any essential particular from that of Hahnemann, is generally adopted: Take of silica, in powder, one part; dried carbonate of sodium, four parts. Fuse the four parts of dry sodic carbonate in a clay crucible, and then gradually add to the fused mass the powdered silica; at each addition of which an escape of carbonic acid gas takes place, so that a roomy crucible should be used.

When the carbonic acid gas is no longer given off, pour the fused mass upon a clean marble slab, and when it is only slightly warm, pulverize it in a mortar into small pieces, put into a wide-mouthed bottle, and add sufficient distilled water to dissolve it, the stopper being capped with wet bladder. The following day the solution may be diluted and rapidly filtered through cotton wool to purify from small pieces of dirt, etc.; then add to the filtered liquor, hydrochloric acid in small quantities from time to time. The hydrated silica is precipitated in the form of a bulky gelatinous white precipitate, which is collected and washed with distilled water upon a square frame filter. The washing must be continued until the filtrate neither tastes nor precipitates solutions of nitrate of silver. The precipitate, when thoroughly washed, may be advantageously dried upon a porcelain water-bath, when it shrinks to an impalpable powder, which has no taste or smell.

Preparation for Homœopathic Use.—Pure silica is triturated, as directed under Class VII.

SILPHIUM LACINIATUM, *Linn.*

Nat. Ord., Compositæ.

Common Names, Rosin Weed. Compass-Plant. Pilot Weed.

This plant is found growing on the prairies of Illinois and Wisconsin, from thence southward and westward. The plant is rough-bristly throughout; stem stout, three to six feet high, leafy to the top; leaves pinnately parted, petioled but dilated and clasping at the base; their divisions lanceolate or linear, acute, cut-lobed or pinnatifid, rarely entire; heads few, one to two inches broad, somewhat racemed; scales of the involucre ovate, tapering into long and spreading rigid points; achenia broadly winged and deeply notched. The yellow-flowered heads appear in July. The lower and root-leaves are vertical, twelve to thirty inches long, ovate in outline, and on the wide open prairies disposed to present their edges north and south; hence called *Compass-Plant*.

Preparation.—The fresh herb, in flower, is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole, pour into a well-stoppered bottle, and let it stand eight days, in a dark, cool

place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{4}$.

Dilutions must be prepared as directed under Class III.

SIMARUBA OFFICINALIS, *De Candolle.*

Synonyms, *Simaruba Amara, Aublet.* *Simaruba Guianensis, Richard.* *Quassia Simaruba, Linn.*

Nat. Ord., Simarubaceæ.

Common Name, *Simaruba.*

This species is a native of South America from Guiana to Northern Brazil. It is sixty to seventy feet high, and has some resemblance to the ash. The leaves are alternate, pinnate, and have from eight to twelve or sixteen oval-oblong, obtuse or mucronate, entire, short stalked leaflets about four inches long. The diœcious or monœcious flowers are small, white, and are aggregated in few-flowered clusters on the slender alternate branches of an elongated racemose inflorescence.

Description of Bark.—The bark of the root comes in curved or quilled pieces, which are several feet long, one to two or three inches wide, and about one-eighth or sometimes one-quarter inch thick. Its external surface is uneven, rough, and wrinkled, covered with a yellowish or brownish suberous layer, or if this is removed, of a grayish-brown color. The coarsely fibrous bast layer is thick and dull brownish; the inner surface is of a lighter color and striate. The bark is very tough, and breaks with difficulty in a transverse direction, but may be longitudinally torn, the pieces remaining united by some of the long and tough bast fibres. When cut transversely, the outer tissue is seen to contain scattered brown-yellow granules, and the inner layer is radially striate in an oblique direction caused by the long and wavy bast wedges. *Simaruba* bark is without odor, and has a strong and persistent bitter taste.

Preparation.—The bark of the root is finely powdered and covered with five parts by weight of alcohol, poured into a well-stoppered bottle, and allowed to remain eight days in a dark, cool place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Amount of drug power, $\frac{1}{16}$.

Dilutions must be prepared as directed under Class IV.

SINAPIS NIGRA, *Linn.*

Synonyms, *Brassica Nigra.* *Melanosinapis Communis.*

Nat. Ord., Cruciferae.

Common Name, Black Mustard.

Common or black mustard is an annual plant, with a stem three or four feet in height, divided and subdivided into numerous spreading branches. The leaves are petiolate and variously shaped. Those near the root are large, rough, lyrate-pinnate, and unequally toothed; those higher on the stem are smooth, and less lobed; and the uppermost are

entire, narrow, smooth, and dependent. The flowers are small, yellow, with a colored calyx, and stand closely together upon peduncles at the upper part of the branches. The pods are smooth, erect, nearly parallel with the branches, quadrangular, furnished with a short beak, and occupied by numerous seeds, which are small, globular, of a deep brown color, slightly rugose on the surface, and internally yellow.

The plant is a native of Europe, but has become naturalized in some parts of this country. Flowers appear in June.

Preparation.—The ripe seeds, finely powdered, are covered with five parts by weight of alcohol, poured into a well-stoppered bottle, and allowed to remain eight days in a dark, cool place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{15}$.

Dilutions must be prepared as directed under Class IV.

SOLANUM.

Synonym, *Solanum Nigrum*, *Linn.*

Nat. Ord., Solanaceæ.

Common Names, Common Nightshade. Black Nightshade.

This is a very common homely weed, said to be poisonous, growing in shaded grounds and fields, in Europe, Asia, and America. It is an annual, low, much branched and often spreading, rough on the angles; leaves ovate, wavy-toothed; flowers (very small, white) in small and umbel-like lateral clusters, drooping; berries globular, black; flowers appear from July to September.

Preparation.—The fresh herb, gathered when coming into bloom, is chopped and pounded to a pulp, and pressed out in a piece of new linen. The expressed juice is then, by brisk agitation, mingled with an equal part by weight of alcohol. This mixture is allowed to stand eight days, in a well-stoppered bottle, in a dark, cool place, and then filtered.

Amount of drug power, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class I.

SOLANUM ARREBENTA.

Synonym, *Solanum Aculeatissimum*. *Arrebenta Cavallos*.

Nat. Ord., Solanaceæ.

This bush grows spontaneously in the provinces of Rio Janeiro, along roads and in cultivated places. It is from ten to sixteen inches high; its branches, which bifurcate regularly, are, while young, covered with strong thorns growing from above downwards. Leaves slightly pubescent, cordate, with five obtuse lobes; their nerves are furnished with a few irregularly distributed thorns. The flowers are supported by peduncles arising from the axils of the leaves in groups of two or three. Calyx with five parts, very prickly on the outside; corolla with five divisions; five stamens; a style. Berry red, fleshy, with two chambers, containing a large number of small seeds. Roots fibrous, arising from a common rhizoma.

Preparation.—The fresh leaves are triturated as directed under Class IX.

SOLANUM MAMMOSUM, Linn.

Synonym, Mammiform Solanum.

Nat. Ord., Solanaceæ.

Common Name, Nipple Nightshade.

This bush is a native of Virginia, Barbadoes, Carolina, the West Indies and Antilles, and grows in hedges and on cultivated places. Stem herbaceous, furnished with prickles and long hairs, erect, branchy, from three to four feet high; leaves large, generally more broad than long, cordiform, irregularly-angular, lobed, shaggy on both sides, with yellow nerves on the lower surface, the midrib furnished with dark yellow prickles; flowers scattered, paniced, of a blue-gray; berries macuniiform, yellow.

Preparation.—The fresh, ripe berries, are pounded to a pulp and pressed out in a piece of a new linen. The expressed juice is then, by brisk agitation, mingled with an equal part by weight of alcohol. This mixture is allowed to stand eight days in a well-stoppered bottle, in a dark, cool place, and then filtered.

Amount of drug power, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class I.

SOLANUM OLERACEUM, Velloz.

Synonyms, Gyguirioba. Juguerioba.

Nat. Ord., Solanaceæ.

This is an herbaceous plant with a creeping and somewhat ligneous, cylindrical stem, the upper branches being covered with short and crooked thorns. The leaves, of a dark green, are alternate, irregularly pinnate; the folioles are long, lanceolate, almost sessile on a thorny spike; there are from seven to nine, those at the top being the largest. The flowers are supported by ramose pedicles, which do not grow out of axils; calyx campanulate, with five divisions; corolla of a greenish-white, monopetalous, with five equal, rotaceous, somewhat reflexed divisions alternating with those of the calyx; stamens five, with erect, converging and bilocular anthers; their filaments are short, with the exception of one, which is longer than the rest; ovary oval, surmounted by a filiform style. Berry spherical with two compartments, of a dark green, with white spots. This solanum grows on the shores around Rio Janeiro, in damp and shady places.

Preparation.—The fresh blossoms are triturated as directed under Class IX.

SOLANUM TUBEROSUM ÆGROTANS.

The Diseased Potato.

The potato is a native of Chili, but is very largely cultivated in nearly all countries. It is an herbaceous plant, with a branchy stem about one or two feet high. Its leaves are pinnatifid, with leaflets that

are oval, entire, slightly hairy on their lower surface and almost opposite. Smaller folioles sometimes arise between the larger ones. The flowers constitute corymbs either erect or inclined; calyx in five parts; corolla of a white-violet with five equal divisions; five stamens attached to the basis of the corolla; one style and stigma, fleshy berry with two chambers. The roots develop tubercles of different sizes, and are called potatoes. The potato-rot first reveals itself by brown spots irregularly distributed through the interior of the tubercles; gradually these spots are transformed into white points of a cottony appearance which may be compared to the cryptogamia termed byssus, and found on damp wood. From this point a general process of decomposition sets in, and the potato exhales an insupportable nauseous odor.

Preparation.—The potato in such a state of decomposition as to contain brown portions intermingled with the byssus-shaped parts described above, is triturated as directed under Class IX.

SOLIDAGO VIRGA-AUREA, Linn.

Nat. Ord., Compositæ.

Common Name, Golden-Rod.

This is a variable species indigenous to Europe, Northern Asia, and on this continent to Canada and the northern portion of the United States. It is from one to three feet high, branched above, pubescent or nearly glabrous; leaves lanceolate or oblanceolate, or the lowest spatulate or elliptical-obovate and petioled, serrate with small appressed teeth or nearly entire; racemes thyrsoïd or simple, narrow; scales of the involucre lanceolate or linear, acute. The flower-heads contain eight or ten ligulate and several tubular disc-florets of a yellow color. The herb has an aromatic odor, and a bitterish and somewhat astringent taste.

Preparation.—The fresh blossoms are chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole, pour it into a well-stoppered bottle, and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, †.

Dilutions must be prepared as directed under Class III.

SPARTIUM SCOPARIUM, Linn.

Synonyms, *Sarothamnus Scoparius, Koch.* *Cytisus Scoparius, Link.* *Sarothamnus Vulgaris, Wimmer.* *Genista Scoparia, Lamarck.*

Nat. Ord., Leguminosæ.

Common Names, Broom. Broom Tops.

The broom is a shrub about three to six feet high, and grows in Western Siberia, and throughout Southern Europe, but is more abundant in the western part of that continent and in Great Britain. It is sometimes cultivated in our gardens, and is occasionally met with wild

in some of the Middle and Southern States. It prefers a sandy soil, and flowers in May and June. The shrub has long wand-like branches, small trifoliate leaves with obovate or elliptic-lanceolate sessile leaflets, and produces an abundance of large golden-yellow papilionaceous flowers, and a flat dark brown legume, which is white-hairy on the edges, and contains about twelve olive-colored, oblong, and, below, truncate seeds.

Preparation.—The fresh blossoms are pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole, pour into a well-stoppered bottle, and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Amount of drug power, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

SPIGELIA.

Synonyms, *Spigelia Anthelmintica*, Linn. *Anthelminthia Quadriphylla*.

Nat. Ord., Loganiaceæ.

Common Names, Pinkroot. Wormgrass.

This is an annual plant of the West Indies and South America. Its root is short and divided into numerous long, thin, blackish and internally whitish branches. Its stem is herbaceous, twelve to eighteen inches high, channeled and branched. Leaves opposite in pairs, those which terminate the branches four together in the form of a cross, ovate, pointed. The flowers stand in short spikes, and are pale reddish or purple, not over one-half inch long. The dried plant is of a grayish-green color, has a faint odor and a bitter taste. Its flowers appear in July.

Preparation.—The freshly dried herb, having been gathered when there are flowers and seeds, is finely powdered, covered with five parts by weight of alcohol, and allowed to remain eight days, in a well-stoppered bottle, in a dark, cool place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{16}$.

Dilutions must be prepared as directed under Class IV.

SPIGGURUS MARTINI, Nobis.

Synonyms, *Sphingurus Martini*. *Chætomys Subspinosus*.

Class, Mammalia.

Order, Glires.

Family, Hystrichina.

Common Name, Porcupine.

The porcupine is common in Brazil, where it lives on trees and secures itself by means of its hind-feet; it uses its tail, which is pretty long, as a means of descending. Its length, from the muzzle to the tip of the tail, is about a foot; the tail is almost as long as the trunk. The

upper parts of the body are covered with sharp prickles about an inch and a half long, and attached to the skin by means of a very thin pedicle. The head-prickles are white at the base, black in the middle and of a yellowish-brown at the top, the dorsal-prickles are of a sulphur-yellow at their base. The prickles on the rump and the first third of the tail, are black at their extremity. All the prickles are very close together, mingled with a few long and fine hairs. The lower limbs are covered with a grayish fur, interspersed with little prickles; the tail is furnished with prickles at its upper part, and is covered with stiff and black hairs; the extremity of the tail is bare.

Preparation.—The prickles taken from the sides of the animal, are triturated according to Class IX.

SPONGIA.

Synonyms, Spongia Tosta. Spongia Officinalis, Linn.

Class, Poriphera.

Order, Ceratospongiae.

Common Name, Sponge.

Origin and Description.—Sponges belong to the lowest animals which live in water, and are attached to rocks or other substances. They consist of a framework arising from a broad base, and forming a ramifying and anastomosing tissue which is traversed by numerous canals and pores, and covered with a glairy or gelatinous substance. In some genera the skeleton is formed, to a greater or less extent, of siliceous or calcareous spicules; in others the whole body consists of a gelatinous substance. The sponges which are in common use belong to a few species, the skeleton of which is entirely or nearly free from spicules, and forms cup-shaped or convex, porous, and lacumose masses, with circular vents on the surface. They are collected by divers, who tear them from the rocks, or they are detached by means of a fork fastened to the end of a long pole. The gelatinous animal matter is removed by burying them for several days in sand, and afterwards soaking, squeezing and washing them.

The best variety of sponge comes from the Mediterranean, and is chiefly collected in the neighborhood of Greece, and near the coast of Syria. It is known in commerce as *Mediterranean* and *Turkish sponge*, and comes in cup-shaped pieces of various sizes, having a soft, elastic, and compressible fibrous framework. The *Bahama* or *West Indian sponge* is collected near the Bahama Islands, and forms convex or oblong pieces, with somewhat projecting lobes, and of a coarser texture than the preceding. As met with in commerce sponge generally contains a large quantity of sand, from which it is freed by beating, and various calcareous matters, which are removed mechanically.

Preparation for Homœopathic Use.—Turkey sponge roasted brown (but not burnt) in a roaster kept turning over burning charcoal, is covered with five parts by weight of alcohol, and allowed to remain eight days in a well-stoppered bottle in a dark, cool place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Amount of drug power, $\frac{1}{10}$.

Dilutions must be prepared as directed under Class IV.

Triturations prepared as directed under Class VII are also officinal.

STANNUM.

Synonym, Stannum Metallicum.

Common Names, Tin. Metallic Tin. Pure Tin.

Symbol, Sm.

Atomic Weight, 118.

Origin and Preparation of Tin.—Tin is rarely found in the metallic state. Its most important ore is a binoxide, SnO_2 , known as *tinstone*, which is usually imbedded in granite, quartz or slate, and often associated with iron pyrites, and with tungstate of iron and manganese, known as the mineral *wolfram*. It is rarely met with as silicate, and is present in *columbite*, *tantalite* and allied minerals, and in minute proportions in the mineral waters of Salschütz and other places. The most important tin mines are in Devonshire and Cornwall, in Great Britain, and in Malacca and Banca; but tin is likewise obtained in Australia, Bohemia, Saxony, and some parts of the United States. Australian tin sometimes contains gold.

The tinstone is stamped into a coarse powder, freed from lighter minerals by washing with a stream of water, roasted to expel arsenic and sulphur, again washed with water, mixed with powdered coal and a little lime or fluor spar, for the purpose of forming a fusible slag, and then reduced on the hearth of a reverberatory furnace.

Properties.—Tin is a bluish-white metal of the specific gravity 7.3, softer than gold, but harder than lead, and, when bent, emitting a crackling sound. It may be rolled or hammered into *foil*, and at 100° C. (212° F.) drawn into wire. It melts near 230° C. (446° F.), and at 200° C. (392° F.) it is so brittle that it may be readily reduced to powder. It is but superficially oxidized in moist air, and will effectually protect iron from rusting as long as the coating is perfect. Its alloy with lead forms *pewter*, *Britannia metal* and *solder*; alloyed with copper it constitutes *gun metal* and *bronze*; and by combining four parts of tin with three of cadmium, eight of lead, and fifteen of bismuth, a fusible alloy is obtained, melting at 60° C. (140° F.).

Metallic tin dissolves in hot strong sulphuric acid to stannic sulphate, evolving sulphurous acid gas. Strong hydrochloric acid dissolves it to stannous chloride, and nitro-muriatic acid yields with it stannic chloride. *Stannous salts* are precipitated brown by sulphuretted hydrogen, the precipitate being soluble in ammonium sulphhydrate. Chloride of gold produces a deep purple precipitate (*Purple of Cassius*), and mercuric chloride is reduced either to calomel or to a gray powder of metallic mercury. This reaction explains the value of stannous chloride as a test for salts of mercury. *Stannic salts*, of which the chloride, SnCl_4 , is used by dyers, do not react with the chlorides of gold and mercury, but yield, with sulphuretted hydrogen, a yellow precipitate which is soluble in ammonium sulphhydrate. Both stannous and stannic salts are precipitated white by caustic potassa; the precipitates are soluble

in an excess of potassa, and the alkaline solution, when obtained from stannous salts, yields, on boiling, a black precipitate of stannous oxide.

Stannum Precipitatum.—For medical purposes we first reduce tin by melting and pouring it out into a deep vessel with pure water into thin lamins.

A weighed quantity of such laminated tin is covered, in a proper vessel, with pure concentrated muriatic acid, and set aside under a moderate warmth for dissolution. Without fear of adulteration, a polished copper vessel may be advantageously selected for this, so long as care is taken to have tin always in excess. By adding muriatic acid gradually, the perfect solution is effected. This solution, filtered, being as neutral as possible, is diluted with so much distilled water that the bulk of liquid is a hundred times greater than the dissolved tin it contains. After having slightly acidulated the solution with pure muriatic acid, if necessary, the galvanic reduction of the metal is effected by the addition of zinc, and the whole process is followed up as given under Plumbum. In this way a subtle and quite pure metallic powder is obtained, being of light yellowish-gray color without brightness, which it soon assumes under the burnishing-steel.

Preparation for Homœopathic Use.—The precipitated metal is triturated, as directed under Class VII.

STAPHISAGRIA.

Synonyms, Delphinium Staphisagria, *Linn.* Staphydis Agria. Staphisagria Pedicularis.

Nat. Ord., Ranunculaceæ.

Common Names, Stavesacre. Lark-spur. Louse Seeds.

This is a handsome annual or biennial plant, one or two feet high, with a simple, erect, downy stem, and palmate, five or seven-lobed leaves, supported on hairy footstalks. The flowers are bluish or purple, in terminal racemes, with pedicels twice as long as the flower, and bracteoles inserted at the base of the pedicel. The nectary is four-leaved and shorter than the petals, which are five in number, the uppermost projected backward so as to form a spur, which encloses two spurs of the upper leaflets of the nectary. The seeds are contained in straight, oblong capsules, and are about as large as a grain of wheat, irregularly triangular, wrinkled, externally brown, internally whitish and oily. They have a slight but disagreeable odor, and an extremely acrid, bitter, hot, nauseous taste. The plant is a native of the south of Europe.

Preparation.—The ripe seed, finely powdered, is covered with five parts by weight of alcohol, and allowed to remain eight days in a well-stoppered bottle in a dark, cool place, being shaken twice a day. The tincture is poured off, strained and filtered.

Drug power of tincture, $\frac{1}{10}$.

Dilutions must be prepared as directed under Class IV.

STICTA.

Synonyms, *Sticta Pulmonaria*, *Linn.* *Laboria Pulmonaria*. Lichen Pulmonarius. *Pulmonaria Reticulata*.

Nat. Ord., Lichenes.

Common Names, Lungwort Lichen. Tree Lungwort. Oak-lungs. Lung Moss.

This lichen is found growing on the trunks of large trees in the northern and mountainous counties of England, in New England, New York, Pennsylvania, and Carolina, of the United States. It is leafy, lacinated, obtuse, smooth; green above, and pitted, somewhat reticulated; downy beneath; shields mostly marginal.

Preparation.—The fresh lichen, grown on the sugar-maple, is finely chopped, covered with five parts by weight of dilute alcohol, poured into a well-stoppered bottle and allowed to remain eight days in a dark, cool place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Amount of drug power, $\frac{1}{16}$.

Dilutions must be prepared as directed under Class IV.

STILLINGIA.

Synonyms, *Stillingia Sylvatica*, *Linn.* *Sapium Sylvaticum*, *Torrey*.

Nat. Ord., Euphorbiaceæ.

Common Names, Cock-up-hat. Queen's Root. Queen's Delight. Yaw Root.

This is an indigenous perennial plant, with herbaceous stems, two or three feet high, and alternate, sessile, oblong or lanceolate-oblong, obtuse, serrulate leaves, tapering at the base, and accompanied with stipules. The male and female flowers are distinct upon the same plant. They are yellow, and arranged in the form of a spike, of which the upper part is occupied by the male, the lower by the female flowers. The male florets are scarcely longer than the bracteal scales; involucre hemispherical, many-flowered, or wanting. Calyx tubular, eroded. Stamens two and three, exserted. In the female, calyx one-flowered, inferior. Style trifid. Capsule three-grained. The plant grows in pine barrens from Virginia to Florida, and when wounded emits a milky juice.

Preparation.—The fresh root is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and after thoroughly mixing the pulp with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole, pour it into a well-stoppered bottle and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{4}$.

Dilutions must be prepared as directed under Class III.

STRAMONIUM.

Synonyms, *Datura Stramonium*, *Linn.* *Solanum Maniacum*.

Nat. Ord., Solanaceæ.

Common Names, Jamestown or Jimson Weed. Thornapple.

This is an annual plant, of rank and vigorous growth, usually about three feet high, but in a rich soil sometimes six feet or more. The root is large, whitish, and furnished with numerous fibres. The stem is erect, round, smooth, somewhat shining, simple below, dichotomous above, with numerous spreading branches. The leaves, which stand upon short, round footstalks, in the forks of the stem, are five or six inches long, of an ovate-triangular form, irregularly sinuated and toothed at the edges, unequal at the base, dark green on the upper surface, and pale beneath. The flowers are large, axillary, solitary, and peduncled; having a tubular, pentangular, five-toothed calyx, and a funnel-shaped corolla with a long tube, and a waived plaited border, terminating in five acuminate teeth. The upper portion of the calyx falls with the deciduous parts of the flower, leaving its base, which becomes reflexed, and remains attached to the fruit. This is a large, fleshy, roundish-ovate, four-valved, four-celled capsule, thickly covered with sharp spines, and containing numerous seeds, attached to a longitudinal receptacle in the centre of each cell. It opens at the summit. The seeds are small, kidney-shaped, flattened on the sides, of a dark brown, almost black color, inodorous unless bruised, and of bitter, nauseous taste, with some degree of acrimony.

It is doubtful to what country this plant originally belonged. It is found in Europe, Asia, Africa, and America. In the United States it is found everywhere in the vicinity of cultivation, frequenting dung-heaps, the road-sides and commons, and other places where a rank soil is created by the deposited refuse of towns and villages. Its flowers appear from May to July or August, according to the latitude. Where the plant grows abundantly, its vicinity may be detected by the rank odor which it diffuses to some distance around.

Preparation.—The ripe seed, finely powdered, is covered with five parts by weight of alcohol, poured into a well-stoppered bottle and allowed to remain eight days in a dark, cool place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{16}$.

Dilutions must be prepared as directed under Class IV.

STRONTIANA CARBONICA.

Synonyms, Strontianite. Carbonas Stronticus. Strontianæ Carbonas.

Mineral, S_2O , CO_2 .

Common Name, Carbonate of Strontian.

Description.—The crystals of carbonate of strontiana are right rhombic, with lateral cleavage nearly perfect; also fibrous granular. Green, white, gray, yellow, brown, usually light colors; vitreous, transparent, translucent; brittle with white streak. It puffs by heat, fuses on the edges, illuminates powerfully, and gives a reddish color to the reducing flame; soluble in acids with effervescence.

Preparation.—For homœopathic purposes we dissolve carbonate of strontiana in muriatic acid and crystallize it. It is purified by repeated recrystallizations. Of this pure *muriate of strontio* we take one

part and dissolve it in ten parts of distilled water, from which it is precipitated by a solution of carbonate of soda. The precipitate is washed repeatedly and carefully dried.

Properties.—It is a white, light, fine powder, similar in appearance to carbonate of magnesia. Soluble in 1536 parts of water, but freely soluble in carbonic acid water, from which solution it is crystallizable.

Preparation for Homœopathic Use.—The pure strontiana carbonica is triturated as directed under Class VII.

STRYCHNINUM.

Synonyms, Strychninum Purum. Strychnia.

Common Name, Strychnine.

Formula, $C_{21}H_{22}N_2O_2$.

Molecular Weight, 334.

Preparation of Strychnia.—Take of nux vomica rasped, forty-eight troy ounces; lime in fine powder, six troy ounces; muriatic acid, three troy ounces and a half; alcohol, diluted alcohol, diluted sulphuric acid, water of ammonia, purified animal charcoal, water, of each a sufficient quantity. Macerate the nux vomica for twenty-four hours in sixteen pints of water, acidulated with one-third of the muriatic acid; then boil for two hours, and strain with expression through a strong muslin bag. Boil the residue twice successively in the same quantity of acidulated water, each time straining as before. Mix the decoctions, and evaporate to the consistence of thin syrup; then add the lime previously mixed with a pint of water, and boil for ten minutes, frequently stirring. Pour the whole into a double muslin bag, and, having thoroughly washed the precipitate, press, dry, and powder it. Treat the powder repeatedly with diluted alcohol, in order to remove the brucia, until the washings are but faintly reddened by nitric acid. Then boil it repeatedly with alcohol until deprived of bitterness, mix the several tinctures, and distil off the alcohol by means of a water-bath. Having washed the residue, mix it with a pint of water, and, applying a gentle heat, drop in enough diluted sulphuric acid to neutralize and dissolve the alkaloid. Then add purified animal charcoal, and, having boiled the mixture for a few minutes, filter, evaporate, and set aside to crystallize. Dissolve the crystals in water, and add enough water of ammonia to precipitate the strychnia. Lastly, dry this on bibulous paper, and keep it in a well-stoppered bottle.

Properties.—Strychnia is seen in commerce as a white powder, or crystallized in short, quadrangular prisms. It is inodorous, has a very persistent bitter taste, and is sublimable only when very minute quantities are carefully heated. Pelletier and Caventon, who discovered this alkaloid in 1818, found it soluble in about 6,700 parts of cold, and 2,500 parts of boiling water, and to be insoluble in ether. It requires 120 parts of cold, and 10 parts of boiling 80 per cent. of alcohol for solution (Wittstein); but it is very sparingly soluble in absolute and in dilute alcohol. It dissolves in about five parts of chloroform (Pettenkofer); in 300 parts of glycerin (Cass and Garot); and is also soluble

to some extent in volatile and fixed oils, in creasote, benzol, and amylic alcohol. Its solubility in water is not increased by ammonia or caustic potassa; but dilute acids render it much more soluble, with the formation of neutral salts, which are mostly crystallizable, and are precipitated by alkalies, alkaline carbonates, and, after some time, by soluble bicarbonates.

Tests.—Strychnia and its salts dissolve in concentrated sulphuric acid without color; but on the addition of a little peroxide of lead a beautiful blue color is produced, passing into violet, red, and finally into yellow (Marchand). If bichromate of potassium is used instead of the lead oxide, a deep violet color is produced, or a blue color if strychnia is in excess (Otto). A similar color is obtained with sulphuric acid and ferridcyanide of potassium (Davy); it passes like the preceding, though more slowly, through red into yellow. The solution of strychnia in sulphuric acid containing some nitric acid yields on the addition of binoxide of manganese a purplish-violet color (Mack, Erdmann); and a similar color, but rapidly fading to yellow, is produced with chloric, chlorous, and iodic acids and their salts, with manganic sulphate and potassium permanganate (Lefort). If much contaminated with organic matter, the alkaloid is best purified by dissolving it in dilute acid so as to free it from fatty and resinous matters, liberating it by ammonia, and dissolving it by agitation with chloroform; if necessary, the process is repeated, and the residue from the evaporation of chloroform is tested as above. If the above tests are carefully applied, a very minute quantity may be detected, according to Wenzell (1870), in a solution containing the $\frac{1}{500000}$ part of strychnia. The freedom from inorganic matters is readily proven by the absence of ash or incinerating a portion. Concentrated nitric acid should not produce a red color, showing the absence of brucia.

Preparation for Homœopathic Use.—Pure strychnia is triturated as directed under Class VII.

STRYCHNINUM MURIATICUM.

Synonym, Strychniæ Hydrochloras.

Common Name, Muriate of Strychnia.

Formula, $2(C_{21}H_{22}N_2O_2 \cdot HCl), 3H_2O$.

Molecular Weight, 795.

Preparation and Properties of Muriate of Strychnia.—It is best prepared by dissolving strychnia in warm dilute hydrochloric acid. It crystallizes in silky needles, which lose their water of crystallization at $120^\circ C$. It dissolves in from 50 to 60 parts of cold water, and contains 84 per cent. of strychnia.

Preparation for Homœopathic Use.—Pure muriate of strychnia is triturated, as directed under Class VII.

STRYCHNINUM NITRICUM.

Synonym, Strychniæ Nitras.

Common Name, Nitrate of Strychnia.

Formula, $C_{21}H_{22}N_2O_2 \cdot HNO_3$.

Molecular Weight, 397.

Preparation of Nitrate of Strychnia.—On dissolving strychnia in warm, very dilute nitric acid, the solution yields on cooling, colorless needles of a silky lustre and very bitter taste.

Properties.—The salt is soluble in eighty parts of cold and in three parts of boiling water, and in about the same proportion in eighty per cent. alcohol. It is less freely soluble in absolute alcohol and fixed oils, is insoluble in ether, but dissolves in twenty-six parts of glycerine. It contains 84 per cent. of strychnia.

Preparation for Homœopathic Use.—Pure nitrate of strychnia is triturated, as directed under Class VII.

STRYCHNINUM PHOSPHORICUM.

Synonym. Strychniæ Phosphas.

Common Name. Phosphate of Strychnia.

Preparation of Phosphate of Strychnia.—It is best prepared by dissolving strychnia in warm dilute phosphoric acid, when it crystallizes in silky needles.

Preparation for Homœopathic Use.—Pure phosphate of strychnia is triturated, as directed under Class VII.

STRYCHNINUM SULPHURICUM.

Synonym. Strychniæ Sulphas.

Common Name. Sulphate of Strychnia.

Formula. $2\text{C}_{21}\text{H}_{22}\text{N}_2\text{O}_2 \cdot \text{H}_2\text{SO}_4 \cdot 7\text{H}_2\text{O}$.

Molecular Weight. 892.

Preparation of Sulphate of Strychnia.—Take of strychnia, a troy ounce; diluted sulphuric acid, nine fluidrachms, or a sufficient quantity; distilled water, a pint. Mix the strychnia with the distilled water, heat the mixture gently, and gradually add diluted sulphuric acid until the alkaloid is neutralized and dissolved. Filter the solution, and evaporate with a moderate heat, so that crystals may form on cooling. Lastly, having drained the crystals, dry them rapidly on bibulous paper, and keep them in a well-stoppered bottle.

Properties.—Sulphate of strychnia crystallizes in small, neutral, transparent cubes or prisms, which become superficially opaque on exposure, and when heated to about 135°C . (275°F .) melt, and lose 14.1 per cent. of water of crystallization. The salt dissolves in 48 parts of water, is also soluble in alcohol, but insoluble in ether. Like other salts of strychnia, it gives the same color reactions as strychnia, and on being ignited leaves no residue.

Preparation for Homœopathic Use.—Pure sulphate of strychnia is triturated, as directed under Class VII.

SUCCINUM.

Synonym. Amber.

Origin and Properties.—Amber is a fossil resin, which is principally obtained on the southern coast of the Baltic, where it is cast ashore or dug out of beds. It has also been found in the interior of

Europe, and in Greenland and North America. It is hard, brittle, whitish-yellow or red-brown, transparent, translucent or opaque, breaking with a conchoidal fracture, fragrant when heated, fusible at about 287.5° C. (550° F.); soluble in chloroform, but insoluble in water, alcohol, ether and oils. Its density is 1.070. According to Gœppert, it is the exudation of *Pinitis succinefer*, an extinct coniferous tree.

Preparation for Homœopathic Use.—Amber is triitated, as directed under Class VII.

SULPHUR.

Synonyms, Sulphur Sublimatum Lotum. Flores Sulphuris.

Common Names, Brimstone. Washed Sublimed Sulphur. Flowers of Sulphur.

Symbol, S.

Atomic Weight, 32.

Origin.—Sulphur is a constituent of the volatile oils of mustard, garlic, and asafoetida, and of albumen and other proteids. It is found in many mineral waters as sulphuretted hydrogen, and in the form of sulphates, and is widely distributed in the mineral kingdom in combination with metals, forming iron pyrites, Fe S_2 , galena, Pb S , blende, Zn S , black antimony, $\text{Sb}_2 \text{S}_3$, cinnabar, Hg S , and other sulphides; and as sulphate in gypsum, heavy spar, and many other minerals. But sulphur is most abundantly obtained from *native sulphur*, which is found in volcanic countries. Beds of native sulphur have been discovered in California and other parts of the Western United States, in Mexico, the West Indies, etc.; the chief supply of sulphur, however, comes from Italy, where extensive beds are worked near Latera and Scrofano, and from the provinces of Girgenti, Caltanissetta, Catania, and Palermo, in the Island of Sicily. Sulphur beds on the surface of the earth are called *solfatare*, and when they are found under-ground are known as *solfare*. The latter are the most important, and yield nearly the whole of the commercial sulphur.

Extraction and Purification.—Sulphur is obtained in Sicily by melting it from the mineral in semi-circular pits called *calcaroni*, which have a diameter of about thirty feet and a depth of about eight feet, and are internally covered with a layer of gypsum. The bottom is inclined towards one side, which has an opening, closed during the operation with a thin wall of gypsum. The pit is filled with the mineral, and this is heaped up above so as to form an obtuse cone, the whole being covered first with a layer of powdered sulphur ore, and finally with a stratum of spent ore in powder. Fire is now applied to the heap, and after an hour all openings are closed until after nine days the melted sulphur begins to collect on the floor of the pit. Through a small opening made into the gypsum wall, the melted sulphur is removed two or three times a day and run into moistened moulds made of poplar wood, where it solidifies in the form of blunt pyramids, in which condition it enters commerce.

The *rough sulphur* thus obtained contains from three to four parts of earthy impurities, which are removed by distilling the sulphur from

iron retorts and conducting the vapors into large brick chambers, where they condense in the form of a fine powder, which is from time to time removed, before the condensing chamber becomes too hot, and constitutes *sublimed sulphur*. If, however, the operation is not interrupted, the brick walls of the chamber become hot enough to melt the sulphur, which is run into wooden moulds. The cylindrical pieces thus obtained enter commerce as *brimstone* or *roll sulphur*.

For homoeopathic use sublimed sulphur is washed with distilled water as long as it reddens blue litmus paper, and is then dried.

Properties.—Sulphur exists in several modifications, and is either *crystalline* and soluble in carbon bisulphide, *amorphous* and insoluble in the same liquid, or *soft* or *oily* at common temperatures, and either soluble or insoluble in carbon bisulphide. When sulphur is fused and kept near the temperature of 90° C. (194° F.), octahedral or rhombic crystals are formed, fusing at 115° C. (239° F.); but if the crust which forms on cooling is broken and the liquid sulphur poured out, the vessel will afterwards be filled with long oblique prisms, which melt to a yellowish liquid at 120° C. (248° F.). On gradually increasing the heat to near 180° C. (356° F.), sulphur becomes brown and ultimately black, opaque, and very viscid. If the heat be continued, the mass liquefies again at 260° C. (500° F.), and at about 450° C. (842° F.) is converted into orange-brown vapors. On agitating sublimed sulphur with carbon bisulphide, about two-thirds of it are dissolved, while the remainder is amorphous and remains undissolved. The different varieties of sulphur differ also in specific gravity, that of amorphous and soft sulphur being 1.96, of prismatic sulphur 1.98, and of octahedral sulphur 2.05; this last variety is more stable than the other two, which are under various circumstances converted into it. Heated in the air, sulphur ignites at about 150° C. (302° F.), and burns with a blue flame to sulphurous acid gas, SO_2 . In addition to this only one other oxygen compound of sulphur has been obtained in the isolated state, sulphuric anhydrid, SO_3 , though several others are known in combination, of which the most important is hyposulphurous acid.

Sulphur combines also with most of the non-metallic and metallic elements, forming sulphides, the most important of which are the sulphides of antimony, mercury, iron, potassium, ammonium, and hydrogen. When treated at an elevated temperature with volatile and fixed oils, it dissolves and forms with the fats, compounds which were formerly known as *balsams of sulphur*. Sulphur is insoluble in water, but dissolves somewhat in hot absolute alcohol, ether, chloroform, and benzol.

Washed sublimed sulphur is a yellow or somewhat greenish-yellow slightly gritty powder, which is free from odor and taste, and does not change the color of litmus paper. To heat and solvents it shows the behavior described above.

Tests.—Sulphur should completely evaporate by heat; clay, gypsum, and similar impurities are left behind as fixed residues. Milk of sulphur, precipitated by sulphuric acid, is more readily miscible with water than pure precipitated sulphur, and leaves on ignition a large

amount of fixed residue. When obtained from pyrites, sulphur usually contains arsenic, which is most conveniently detected, unless present in very minute quantities, by digesting it with ammonia water, filtering, and adding hydrochloric acid, when yellow sulphide of arsenic will be precipitated. Very minute quantities of arsenic are best detected by Marsh's test. Selenium, which is sometimes present in sulphur, is detected by heating a sample with nitro-muriatic acid, diluting with water, filtering, and concentrating the filtrate, which contains selenious acid, and yields, on the addition of sulphite of sodium, a bright red or reddish-black precipitate of selenium.

Preparation for Homœopathic Use.—Washed sublimed sulphur is triturated as directed under Class VII.

Sulphuris Tinctura.—One part by weight of washed sublimed sulphur is drenched with ten parts by weight of 95 per cent. alcohol, poured into a well-stoppered bottle, and allowed to remain eight days, being shaken twice a day. The tincture is then poured off, and filtered.

This preparation was considered by Hahnemann to equal the 1 potency ($\frac{1}{100}$).

Dilutions must be prepared as directed under Class VI— β .

SULPHUR IODATUM.

Synonyms, Sulphuris Iodidum. Ioduretum Sulfuris.

Common Name, Iodide of Sulphur.

Preparation of Iodide of Sulphur.—Take of iodine, four troy ounces; sublimed sulphur, a troy ounce. Rub them together until they are thoroughly mixed. Introduce the mixture into a flask, close the orifice loosely, and apply a gentle heat so as to darken the mass without melting it. When the color has become uniformly dark throughout, increase the heat so as to produce liquefaction, and incline the flask in different directions, in order to return into the liquid any portions of iodine which may have been condensed on the inner surface of the vessel. Then withdraw the heat, and, after the liquid has become solid, remove the mass by breaking the flask, reduce it to pieces, and keep them in a well-stoppered bottle.

Properties.—Thus prepared, iodide of sulphur is a grayish-black mass of a radiated crystalline appearance and with a metallic lustre. If exposed to a gradually increased heat, it sublimes, the first portion of the sublimate consisting of iodine, and the portion subsequently obtained containing sulphur. Iodide of sulphur dissolves in about sixty parts of glycerin, and is soluble in carbon bisulphide, on the spontaneous evaporation of which at a low temperature iodine crystallizes first, and afterwards rhombic pyramids of *sulphuric iodide* are obtained, having the formula SI_6 (Vom Rath, 1860), and on exposure to the air leaving sulphur in the form of a delicate crystalline skeleton (Lamers, 1861). Alcohol, ether, volatile oils, and solutions of potassa and of potassium iodide decompose iodide of sulphur, by dissolving the iodine. A similar decomposition is effected by boiling the iodide of sulphur with water, with the vapors of which the iodine passes off, leaving a

residue of sulphur, amounting to 20 per cent. of the weight of the iodide of sulphur employed.

Preparation for Homœopathic Use.—Iodide of sulphur is triturated as directed under Class VII.

SUMBUL.

Synonyms, Sumbulus Moschatus. Ferula Sumbul. Jatamansi.

Nat. Ord., Umbelliferae.

Common Name, Musk-root.

The sumbul plant is indigenous to Turkestan, Bucharia, Eastern Siberia, and probably to other parts of Central Asia, and was discovered by Fedschenko (1869) in the mountains of Maghian, southeastward of Samarkand. It is a perennial, growing to the height of eight feet, and has large, triangular, tripinnate radical leaves, and a few small cauline leaves, the upper ones being reduced to sheathing bracts. The flowers are polygamous, and the fruit is about one-half inch long, oblong-oval, dorsally compressed, and when ripe is free from oil tubes, but in the unripe state has in each mericarp four large dorsal and two small commissural vittae. Sumbul root enters commerce by way of Russia, and is met with in transverse segments, varying in diameter from one inch to four or five inches, and in thickness from three-quarters of an inch to two inches, occasionally intermixed with pieces scarcely one-quarter of an inch in diameter. The root is light, of a spongy texture, annulate or with longitudinal wrinkles, covered with a thin brown bark, is internally whitish, sprinkled with yellowish-brown resinous dots, and consists of white parenchyma and pale brownish fibro-vascular bundles, which are irregular-wavy, and more numerous near the bark than in the centre. Sumbul root breaks with an irregular, farinaceous and fibrous fracture, and has a strong persistent musk-like odor, and a bitter aromatic taste.

Preparation.—The dried root, finely powdered, is covered with five parts by weight of alcohol, and allowed to remain eight days, in a well-stoppered bottle, in a dark, cool place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{10}$.

Dilutions must be prepared as directed under Class IV.

SYMPHYTUM.

Synonyms, Symphytum Officinale, *Linn.* Consolida Majoris.

Nat. Ord., Boraginaceae.

Common Names, Comfrey. Gum Plant. Healing Herb.

Comfrey is a European perennial growing on the banks of streams and in meadows, and now found in similar places in the United States, where it has escaped from gardens. It is a coarse-looking plant with a bristly stem a foot or two in height, and with lance-ovate or lanceolate alternate and rough leaves, which are narrowed into a winged petiole. The flowers are in racemose cymes, have a five-toothed calyx and a tubular, bell-shaped, yellowish-white or purplish corolla, with spreading

teeth and linear scales closing the throat, and produce four smooth, glossy, brown-black akenes. The flowers appear in June. The root is fleshy, six or eight inches long, nearly an inch thick above, several-headed, tapering, and with few branches. It is inodorous, and has a mucilaginous, sweetish and faintly astringent taste.

Preparation.—The fresh root, gathered before the plant blooms, is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole, pour it into a well-stoppered bottle, and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

TABACUM.

Synonym, *Nicotina Tabacum*, *Linn.*

Nat. Ord., Solanaceæ.

Common Name, Tobacco.

The tobacco plant is indigenous to tropical America, but the country which originally produced it cannot now be ascertained, since tobacco is now unknown in the wild state. It is an annual plant, with a large, fibrous root, and an erect, round, hairy, viscid stem, which branches near the top, and rises from three to six feet in height; the leaves are numerous, alternate, sessile, and somewhat decurrent, very large, ovate-lanceolate, pointed, entire, slightly viscid, and of a pale green color; the lowest are often two feet long and four inches broad; the flowers are disposed in loose terminal panicles, and are furnished with long, linear, pointed bractes at the divisions of the peduncle; calyx bell-shaped, hairy, somewhat viscid, and divided at its summit into five pointed segments; the tube of the corolla is twice as long as the calyx, of a greenish hue, swelling at the top into an oblong cup, and ultimately expanding into a five-lobed, plaited, rose-colored border; the whole corolla is very viscid; the filaments incline to one side, and support oblong anthers; the pistil consists of an oval germ, a slender style longer than the stamina, and a cleft stigma; the fruit is an ovate, two-valved, two-celled capsule, containing numerous reniform seeds, opening at the summit; the odor of the fresh plant is poisonous and fetid; the taste is bitter, acrid, and nauseous.

Preparation.—The dried leaves of the genuine Havana tobacco, finely powdered, are covered with five parts by weight of alcohol, and allowed to remain eight days in a well-stoppered bottle, in a dark, cool place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{15}$.

Dilutions must be prepared as directed under Class IV.

TAMUS COMMUNIS, Linn.

Nat. Ord., Dioscoreaceæ.

Common Name, Black Bryony.

This plant, a native of Europe from Belgium southwards, Northern Africa and Western Asia, is found growing in copses and hedges. Rootstock ovoid, black, fleshy, subterranean. Stem many feet long, very slender, angular, branched. Leaves two to three inches long, ovate-cordate, acuminate, long-petioled, obscurely laterally lobed, five to seven-nerved, tip setaceous; stipules reflexed. Flowers one-sixth inch in diameter; males solitary or fascicled on slender racemes which are branched at the base; female racemes, one inch, shorter, recurved, few flowered; bracts minute. Berry, one-half inch, oblong, red. Flowers appear in May and June.

Preparation.—The fresh root is chopped and pounded to a pulp and pressed out in a piece of new linen. The expressed juice is then, by brisk agitation, mingled with an equal part by weight of alcohol. This mixture is allowed to stand eight days in a well-stoppered bottle, in a dark, cool place, and then filtered.

Amount of drug power, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class I.

TANACETUM VULGARE, Linn.

Synonym, Athanasia.

Nat. Ord., Compositæ.

Common Name, Tansy.

Tansy is a perennial plant indigenous to Europe and Central Asia, and naturalized in many parts of North America, where it grows in old fields, along roadsides, and in the neighborhood of river banks. The stout and fibrous many-headed root sends up a cluster of nearly simple stems, which are about three feet high, roundish-angular, and frequently purplish at the base. The leaves are alternate, shortly petiolate or sessile, from five to ten inches long, and nearly half as wide, smooth, dark green, dotted with oil glands, bipinnately divided, and the segments rounded, incised, or coarsely serrate. The flowers are in a dense terminal corymb, have an imbricate involucre with numerous brown-margined scales, a convex naked receptacle, and numerous yellow florets, with the marginal ones pistillate, but not ligulate. The akenes are obovate, about five-ribbed, and terminate with a crown-like pappus. The plant commences to bloom in July. It has a strong, rather unpleasant odor, and an aromatic, pungent and bitter taste.

Preparation.—Equal parts of the fresh leaves and blossoms are chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole, pour it into a well-stoppered bottle, and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Amount of drug power, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

TARAXACUM.

Synonyms, *Taraxacum Dens-leonis*, *Desfontaine*. *Taraxacum Officinale*, *Wiggers*. *Leontodon Taraxacum*, *Linn*.

Nat. Ord., Compositæ.

Common Names, Dandelion. Puff Ball.

This is a perennial acaulescent herb, with a tuft of spreading, short-stalked radical leaves, which are about eight inches long, obovate-oblong, acute, and on the margin runcinately and coarsely serrate. The flower-heads are terminal upon the hollow scapes, about one and a half inch in diameter, and have an erect imbricate involucre, and numerous ligulate, yellow, five-toothed florets. The akene is compressed, obovate-oblong, and terminated by a silky-hairy, spreading pappus raised upon a long stalk. The root is from six to twelve inches, nearly cylindrical, one-half to one inch thick, crowned with several short, thickish heads above and furnished with few branches below. When fresh, it is light yellowish-brown and fleshy. It is inodorous, and has a bitter taste. The plant grows in waste places, pastures, and on roadsides, and is met with in most countries of the Northern Hemisphere.

Preparation.—The whole plant, with the root, gathered in April and May, before the flower is opened, is chopped and pounded to a pulp and pressed out in a piece of new linen. The expressed juice is then, by brisk agitation, mingled with an equal part by weight of alcohol. This mixture is then allowed to stand in a well-stoppered bottle for eight days, in a dark, cool place, and then filtered.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class I.

TARENTULA CUBENSIS.

Synonym, *Tarantula*.

Class, Arachnida.

Nat. Ord., Araneidea.

Family, Lycosidæ.

Common Name, Cuban Spider.

The *Tarentula Cubensis*, found in Cuba and Mexico, belongs to the same family as the *Tarentula Hispana*.

“Although apparently alike, these species differ widely in their pathogenetic and therapeutical effects. The *Tarantula Hispana* is a nervous remedy, acting deeply and powerfully on the cerebro-spinal system, and many cases of chorea, hysteria, etc., have been cured by this precious agent.

“The *Tarantula Cubensis*, on the other hand, seems to be a toxæmic remedy, acting directly on the blood, and being in this way an analogue of crotalus, apis, arsenicum, etc. It seems to be especially useful in malignant ulcers and abscesses, anthrax, and the like.—From *Dr. J. Navarro's article*, read before the *Hom. Med. Soc. of N. Y. Co.*, in the *N. Y. Times*, 1880.

Preparation.—Dr. Navarro put the live spiders into a glass jar,

and by irritating them caused them to throw off their virus on the sides of the jar, whereupon strong alcohol was poured in, and from this tincture dilutions were made according to Class VI— β .

TARENTULA HISPANA.

Synonym, *Lycosa Tarantula*.

Class, Arachnidæ.

Nat. Ord., Araneidea.

Family, Lycosidæ.

This hairy spider, frequently found in Spain, is a native of South America. The specimen used by Marquis Dr. Nunez, who first instituted provings in 1864, were collected at Pardo, Spain. [See *N. A. Jour. of Hom.*, Feb., 1872.] No appreciable difference seems to exist between the virus of the male or female spider.

Preparation.—Dr. Nunez triturated the live spider with sugar of milk to dryness. From this further triturations were made according to Class VII.

TAXUS BACCATA, *Linn.*

Nat. Ord., Coniferae.

Common Names, Yew. Ground Hemlock.

The yew is an evergreen shrub, or more frequently a tree of very slow growth, but attaining a height of thirty or forty feet. It is indigenous to Asia, from Siberia southward to the Himalaya mountains, and westward to Syria, Northern Africa, and the greater part of Europe. The tree has a red-brown bark, numerous, and spreading, or, in one variety, fastigate branches, and closely placed, nearly sessile and two-ranked or crowded leaves which are linear, entire, flat, somewhat curved, acute, glossy green above, pale green beneath, and about one inch long. The fruit or berry consists of a globular-ovate, acutish or blunt, black-brown seed, surrounded by a fleshy cup-shaped scarlet-red arillus, which is open at the top, and at the base furnished with two or three rows of small scales. The leaves have an unpleasant terebinthaceous odor, and a disagreeable bitter and acrid taste.

Preparation.—The fresh leaves are chopped and pounded to a pulp and weighed. Then take two-thirds by weight of alcohol, add it to the pulp, stirring and mixing it well, and strain through a piece of new linen. The tincture thus obtained is allowed to stand eight days in a well-stoppered bottle, in a dark, cool place, and then filtered.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class II.

TECOMA RADICANS, *Jussieu*.

Synonym, *Bignonia Radicans*, *Linn.*

Nat. Ord., Bignoniaceæ.

Common Name, Trumpet Creeper.

This is a climbing plant, grows in rich soil, from Pennsylvania to Illinois and southward, but is also cultivated farther north. It climbs

by rootlets; leaves pinnate; leaflets five to eleven, ovate, pointed, toothed; flowers corymbed; calyx bell-shaped, five-toothed; corolla funnel-form, five-lobed, a little irregular, two to three inches long, orange and scarlet, and very showy; stamens four, not protruded beyond the tubular funnel-form corolla; seeds transversely winged. Flowers from July to September.

Preparation.—The fresh root is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole, pour it into a well-stoppered bottle, and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Amount of drug power, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

TELA ARANEA.

Common Names, Spider's Web. Cobweb.

The genus *Aranea* of Linnæus has been divided by subsequent naturalists into several genera, of which the *Tegeneria* of Walkenaer is the one that includes the medicinal species of spider. The *T. domestica* of Europe, and *T. medicinalis* of this country, are the particular species which have attracted most attention. They inhabit cellars, barns, and other dark places, and are of a brown or blackish color. It is affirmed that the web of the field spider is inefficacious, while that collected in the cellars of houses, etc., has extraordinary medical virtues.

Preparation.—The recently spun web, free from dust, is triturated as directed under Class VII.

TELLURIUM.

Symbol, Te.

Atomic Weight, 64.

Origin and Preparation of Tellurium.—This element possesses many of the characters of a metal, but it bears so close a resemblance to selenium, both in its physical properties and its chemical relations, that it is most appropriately placed in the same group with that body. Tellurium is found in a few scarce minerals in association with gold, silver, lead and bismuth, apparently replacing sulphur, and is most easily extracted from the bismuth sulpho-telluride of Chemnitz in Saxony. The finely powdered ore is mixed with an equal weight of dry sodium carbonate, the mixture made into a paste with oil, and heated to whiteness in a closely covered crucible. Sodium telluride and sulphide are thereby produced, and metallic bismuth is set free. The fused mass is dissolved in water, and the solution freely exposed to the air, when the sodium and sulphur oxidize to sodium hydrate and hyposulphite, while the tellurium separates in the metallic state.

Properties.—Tellurium has the color and lustre of silver; by fusion and slow cooling it may be made to exhibit the form of rhombo-

hedral crystals similar to those of antimony and arsenic. It is brittle, and a comparatively bad conductor of heat and electricity; it has a density of 6.26, melts at a little below a red heat, and volatilizes at a higher temperature. Tellurium burns when heated in the air, and is oxidized by nitric acid.

Preparation for Homœopathic Use.—Tellurium is trituated, as directed under Class VII.

TEREBINTHINA.

Synonym, Oleum Terebinthinæ.

Common Name, Oil of Turpentine.

Preparation of Oil of Turpentine.—Oil of turpentine is obtained by distilling the oleoresinous exudation of various species of pinus. The crude turpentine is put into a large still, heat is applied, and water added from time to time to the contents of the still. The distillation is continued as long as oil passes over, when the resinous mass is run off through a stop-cock placed at the bottom of the still, is passed through several strainers, and then constitutes *rosin*. On condensing the distillate, the oil of turpentine separates from the water and is dipped into barrels in which it enters commerce.

Properties.—Oil of turpentine is a colorless, thin, volatile oil, the density of which varies between 0.86 and 0.87. When recently rectified it boils at about 150° C. (302° F.), but the temperature usually rises as the distillation progresses, and old oil does not generally commence to boil below 155° or 160° C. (311° or 320° F.). Odor and taste are peculiar, strongly terebinthinate, differing to some degree according to the source from which the oil has been obtained. When recently distilled, particularly after rectification with water, the odor is rather mild, but after exposure to air it becomes stronger, more unpleasant and pungent; the oil then contains ozone, and gradually acquires a yellowish color and thicker consistence; at the same time resin and formic and acetic acids are produced, and, in the presence of moisture, also a hydrate of the oil. Oil of turpentine dissolves in ten or twelve parts of alcohol, of sp. gr. 0.835, and in a much smaller quantity of stronger alcohol. Bromine and powdered iodine act violently upon oil of turpentine; nitric acid oxidizes it, the violence of the action and the final products being influenced by the strength of the acid. Gaseous hydrochloric acid unites with oil of turpentine, forming two compounds: one, having the composition $C_{10}H_{16}HCl$, is known as *artificial camphor*, is crystallizable, and has the odor and taste of ordinary camphor, but is less pungent and somewhat terebinthinate.

Purification.—The partially resinified oil is best purified by rectification with water.

Preparation for Homœopathic Use.—One part by weight of purified oil of turpentine is dissolved in fifty parts by weight of alcohol. Amount of drug power, $\frac{1}{100}$.

Dilutions must be prepared as directed under Class VI— β .

TEUCRIUM.

Synonyms, *Teucrium Marum*, *Linn.* *Marum Verum.* *Herba Cyriaci.* *Marjorana Syriaca.*

Nat. Ord., *Labiatae.*

Common Names, *Syrian Herb Mastich.* *Cat Thyme.*

This plant is indigenous to South Europe and Africa, and is cultivated in many parts of Europe. It is shrubby, about ten inches high, and much branched. The leaves are about one-third of an inch long, petiolate, oval, with the margin entire and revolute, and whitish tomentose beneath. The rose-red flowers are single in the axils of the bracts, forming a one-sided spike-like raceme. The plant blooming in June and July, has a strong smell and taste, similar to camphor and valerian.

Preparation.—The fresh plant, gathered shortly before the plant comes into bloom, is chopped and pounded to a pulp and pressed out in a piece of new linen. The expressed juice is then, by brisk agitation, mingled with an equal part by weight of alcohol. This mixture is allowed to stand eight days in a well-stoppered bottle in a dark, cool place and then filtered.

Amount of drug power, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class I.

THASPIUM AUREUM, Nuttall.

Synonyms, *Zizia Aurea*, *Koch.* *Smyrnum Aureum*, *Linn.* *Sium Trifoliatum.* *Sison Aureus.*

Nat. Ord., *Umbelliferae.*

Common Names, *Golden Alexanders.* *Meadow Parsnip.*

This plant is indigenous to the United States and Canada, growing along moist river-banks and in meadows. Stems from one to two feet high, are branching above, rather slender, erect, hollow, angular-furrowed, smooth as well as every other part of the plant, and furnished with few leaves. Leaves biternate; leaflets oval-lanceolate, serrate. The lower leaves are on long petioles. The umbels are about two inches broad, of ten to fifteen rays, the umbellets half an inch broad, dense. Flowers numerous, orange-yellow, and appear in June. Fruit oval, brown, with prominent ribs.

Preparation.—The fresh plant is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole, pour it into a well-stoppered bottle and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Amount of drug power, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

THEA CHINENSIS.

Synonyms, *Camellia Thea.*

Nat. Ord., *Camelliaceae.*

Common Name, *Tea.*

Tea is obtained from a shrub, which is indigenous to Southern or Southeastern Asia, and has been cultivated in India, China, and Japan from a very early period. It is usually from four to eight feet high. It has numerous alternate branches, furnished with elliptical-oblong or lanceolate, pointed leaves, which are serrate except at the base, smooth on both sides, green, shining, marked with one rib and many transverse veins, and supported alternately upon short footstalks. They are two or three inches long, and from half an inch to an inch in breadth. The flowers are either solitary, or supported, two or three together, at the axils of the leaves. They are of considerable size, not unlike those of the myrtle in appearance, consisting of a short green calyx with five or six lobes, of a corolla with from four to nine large unequal snow-white petals, of numerous stamens with yellow anthers and connected at their base, and of a pistil with a three-parted style. The fruit is a three-celled and three-seeded capsule.

Preparation.—Pekoe-tea is finely powdered and covered with five parts by weight of alcohol. Having poured it into a well-stoppered bottle, it is allowed to remain eight days in a dark, cool place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Amount of drug power, $\frac{1}{16}$.

Dilutions must be prepared as directed under Class IV.

THEIN.

Synonym, Theina.

Preparation of Theina.—Tea contains $1\frac{1}{2}$ to 4 per cent. of theina, which was discovered by Oudry (1827), and by Mulder and Jobst (1838) proved to be identical with caffeina. It may be obtained by sublimation on carefully heating powdered tea leaves; or, according to Cazeneuve and Caillot (1877), by macerating in a water-bath and drying a mixture of one part of cut tea leaves, four of water, and one of slaked lime; the residue is exhausted with chloroform; this is distilled off, and the greenish mass treated with boiling water; the solution is passed through a moist filter, and on cooling and concentrating yields the alkaloid.

Preparation for Homœopathic Use.—Theina is triturated as directed under Class VII.

THERIDION CURASSAVICUM.

Synonym, Aranya.

Class, Arachnoidea.

Order, Araneæ.

Family, Sedentariæ.

Common Names, Black Spider of Curacoa. Orange Spider.

This spider is about the size of a cherry-stone, and found on orange trees in the West Indies. When young, it is velvety-black in appearance, marked with antero-posterior lines composed of white dots. At the posterior part of the body there are three orange-red spots, while upon the belly there is a large, square, yellow spot.

Preparation.—The live spider is crushed and covered with five parts by weight of alcohol. Having poured it into a well-stoppered bottle, it is allowed to remain eight days in a dark, cool place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Amount of drug power, $\gamma\delta$.

Triturations are prepared as directed under Class IV.

THLASPI BURSA PASTORIS, *Linn.*

Synonym, *Capsella Bursa Pastoris*, *Mench.*

Nat. Ord., Cruciferae.

Common Name, Shepherd's Purse.

This annual is a native of Europe, but is extensively naturalized in most civilized countries. It has clustered, more or less deeply serrate or pinnatifid root leaves, a stem about a foot or more high, with arrow-shaped sessile leaves and numerous small white flowers in terminal corymbs, which become much elongated. The fruit is a triangular obcordate pouch, which is laterally flattened, has a narrow partition, and contains numerous minute, brown seeds. It flowers from early spring to autumn, and has, particularly in summer, an acrid and bitter taste.

Preparation.—The fresh plant, gathered when in flower, is chopped and pounded to a pulp and weighed. Then take two-thirds by weight of alcohol, add it to the pulp, stirring and mixing it well together, and strain through a piece of new linen. The tincture thus obtained is allowed to stand eight days in a well-stoppered bottle, in a dark, cool place, and then filtered.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class II.

THUYA.

Synonyms, *Thuya Occidentalis*, *Linn.* *Cedrus Lycea*.

Nat. Ord., Coniferae.

Common Names, Arbor Vitæ. Tree of Life. White Cedar.

This is an indigenous evergreen tree, growing wild from Canada to the Carolinas, also cultivated for ornament in our gardens. It is a branchy tree from its root, sometimes rising some thirty feet in height; the branches are flat, compressed, and standing out on all sides; leaves short, evergreen, overlapping like tiles, with obtuse scales, disposed in four ranks; flowers mostly monœcious on different branches, in very small terminal ovoid catkins. Stamens with a scale-like filament or connective, bearing four anther-cells. Fertile catkins of few imbricated scales, fixed by the base, each bearing two erect ovules, dry and spreading at maturity. Cotyledons two. Scales of the cones pointless; seeds broadly winged all round. The flowers appear in May and June, and are of a brownish-yellow color. The leaves when rubbed between the hands give off a pungent aromatic resinous odor.

Preparation.—The fresh leaves, gathered when the plant is just flowering, are chopped and pounded to a pulp and weighed. Then

take two-thirds by weight of alcohol, mix it with the pulp, and strain through a piece of new linen, and allow it to stand eight days in a well-stoppered bottle, in a dark, cool place, and then filter.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class II.

THYMUS.

Synonym, *Thymus Serpyllum*, *Linn.*

Nat. Ord., Labiatae.

Common Name, Wild Thyme.

This perennial little plant is very common in France and Germany, and grows on sunny hills, pasture-grounds, along roads and ditches. Root ligneous, branchy; stems some erect, others creeping, downy, thin, ligneous, quadrangular; leaves oblong-oval, glabrous or hairy, on short peduncles, blunt or rounded, dark green on the upper surface, paler and spotted on the lower, veined; flowers blue-red or reddish-blue in capitate verticils at the end of the stems; calyx ovate, two-lipped, thirteen nerved, hairy in the throat; the upper lip three-toothed, spreading; the lower two-cleft, with the awl-shaped divisions ciliate. Corolla short, slightly two-lipped; the upper lip straight and fattish, notched at the apex; the lower three-cleft. Stamens four, straight and distant, usually exserted.

Preparation.—The fresh plant, in flower, is chopped and pounded to a pulp and weighed. Then add two-thirds by weight of alcohol, mix with pulp, and strain through a piece of new linen, and allow it to stand eight days in a well-stoppered bottle, in a dark, cool place, and then filter.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class II.

TILIA.

Synonym, *Tilia Europæa*, *Linn.*

Nat. Ord., Tiliaceæ.

Common Name, Lime or Linden Tree.

This is a handsome tree, indigenous to Europe, sometimes 120 feet in height, but generally not above half that size. Leaves stalked, broadly heart-shaped or nearly orbicular, often oblique, and always pointed, serrate on the edge, glabrous above and more or less downy underneath, especially in the angles of the principal veins. Peduncles hanging amongst the leaves, bordered or winged half way up by the long, narrow, leaf-like bract. Flowers sweet-scented, of a pale, whitish-green. Nut woody, globular, becoming one-celled and one or two-seeded.

Preparation.—The fresh blossoms, freed from the peduncle, are pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole, pour it into a well-stoppered bottle and let it stand eight days

in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

TITANIUM.

Symbol, Ti.

Atomic Weight, 50.

Origin and Preparation of Titanium.—This is one of the rarer metals, and is never found in the metallic state. The most important titanium minerals are *rutile*, *brookite*, and *anatase*, which are different forms of titanic oxide, and the several varieties of titaniferous iron, consisting of ferrous titanate, sometimes alone, but more generally mixed with ferric or ferroso-ferric oxide. Occasionally in the slag adhering to the bottom of blast-furnaces in which iron ore is reduced, small brilliant copper-colored cubes, hard enough to scratch glass, and in the highest degree infusible, are found. This substance, of which a single smelting furnace in the Hartz produced as much as 80 pounds, was formerly believed to be metallic titanium. Recent researches of Wöhler, however, have shown it to be a combination of titanium cyanide with titanium nitride. When these crystals are powdered, mixed with potassium hydrate and fused, ammonia is evolved, and potassium titanate is formed. Metallic titanium in a finely divided state may be obtained by heating titanium and potassium flouride with potassium. This element is remarkable for its affinity for nitrogen; when heated in the air, it simultaneously absorbs oxygen and nitrogen.

Preparation for Homœopathic Use.—Metallic titanium is triturated as directed under Class VII.

TRADESCANTIA DIURETICA, *Martius*.

Synonym, *Tradescantia Commelina*.

Nat. Ord., Commelynaceæ.

Common Name, Spiderwort.

This herbaceous plant is pretty common in Brazil. Its ramose and cylindrical stems are erect or a little inclined; the leaves are alternate, sheathed, somewhat lanceolate, and constituting at the extremity of the branches tufts whence arise long pedicles, each of which carries from four to six flowers; perianth double; three-leaved, the outer one having sharp, herbaceous divisions, and the inner one being petaloid and blue-colored. Stamens six fertile; a free tri-locular ovary, surmounted by a simple style.

Preparation.—The fresh leaves, gathered at time of flowering, are chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole, pour it into a well-stoppered bottle and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

TRIFOLIUM.

Synonym, *Trifolium Pratense*, *Linn.*

Nat. Ord., Leguminosæ.

Common Name, Red Clover.

This is a biennial plant, common throughout the United States. Stems ascending, somewhat hairy; leaflets oval or obovate, often notched at the end and marked on the upper side with a pale spot; stipules broad, bristle-pointed; heads ovate, sessile.

Preparation.—The fresh blossoms are pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and after thoroughly mixing the pulp with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole, pour it into a well-stoppered bottle, and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{4}$.

Dilutions must be prepared as directed under Class III.

TRIFOLIUM ARVENSE, Linn.

Nat. Ord., Leguminosæ.

Common Names, Rabbit Foot. Stone Clover.

This species is a native of Europe and Central Asia, and has been introduced into America, where it is found growing in old fields. Stems are from five to ten inches high, silky and branching; leaflets oblanceolate; heads becoming very soft-silky and grayish, oblong or cylindrical; calyx-teeth silky-plumose, longer than the whitish corolla; root annual.

Preparation.—The fresh plant, gathered in July and freed from all ligneous stalks, is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, pour it into a well-stoppered bottle, and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Amount of drug power, $\frac{1}{4}$.

Dilutions must be prepared as directed under Class III.

TRILLIUM.

Synonyms, *Trillium Pendulum*, *Aiton and Muhlenberg.* *Trillium Album.*

Nat. Ord., Smilacæ.

Common Name, White Beth-Root.

This is an indigenous plant, common in the Middle and Western States, growing in rich soils, in damp, rocky and shady woods. Root oblong, tuberous, from which arises a slender stem, from ten to fifteen inches in height. Leaves three, whorled at the top of the stem, sub-orbicular rhomboidal, abruptly acuminate, from three to five inches in diameter, on petioles about a line in length. Flowers white, solitary, terminal, cernuous, on a recurved peduncle, from one to two and a half

inches long. Sepals green, oblong-lanceolate, acuminate, an inch long. Petals white, oblong-ovate, acute, one and a quarter inches in length, by half an inch broad. Styles three, erect, with curved stigma.

Preparation.—The fresh root is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole, pour it into a well-stoppered bottle and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

TRIOSTEUM PERFOLIATUM, *Linn.*

Nat. Ord., Caprifoliaceæ.

Common Name, Fever-Wort.

This perennial herb is indigenous, found in rich woodlands. Its stems are from two to four feet high, softly hairy; leaves oval, abruptly narrowed below, downy beneath; flowers sessile, mostly clustered, brownish-purple, appearing in June. Calyx-lobes linear-lanceolate leaf-like, persistent. Corolla tubular, gibbous at the base, somewhat equally five-lobed, scarcely longer than the calyx; stamens five. Ovary mostly three-celled, in fruit forming a rather dry drupe, orange-colored, half an inch long, containing as many angled and ribbed one-seeded bony nutlets.

Preparation.—The fresh root is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole, pour it into a well-stoppered bottle and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Amount of drug power, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

TROMBIDIUM MUSCÆ DOMESTICÆ.

Synonyms, Trombidium Holosericeum. Leptus Auctumnalis.

Class, Arachnoidæ.

Order, Acaridæ.

Family, Thrombididæ.

A minute bright red acarus, found under the wings of the common house-fly in Philadelphia, the provings of which were made by Dr. C. Hering.

Preparation.—The entire acarus is crushed, and covered with fifty parts by weight of alcohol. Having poured it into a well-stoppered bottle, it is allowed to remain eight days in a dark, cool place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Amount of drug power, $\frac{1}{100}$.

Dilutions must be prepared as directed under Class VI— β .

TUSSILAGO PETASITES, Linn.**Synonym,** Petasitides Vulgaris.**Nat. Ord.,** Compositæ.**Common Names,** Butter-Bur. Pestilence Wort.

This plant is a native of Europe. Leaves, the small ones or scales numerous, oblong or linear, entire and erect; the radical ones appearing much later than the flower stems, angular and toothed, covered underneath with a loose, white, cottony wool, of which there is a little also on the upper side. Flowering stems not in tufts, as in the *Common Coltsfoot*, often a foot high when full-grown, with many flower-heads of a dull pinkish-purple, in a narrow oblong terminal panicle, and almost dioecious. The male plant has a looser panicle of smaller heads, the florets either all tubular and male (the pistil, although apparently perfect, having no ovule and forming no seed), or with a few piliform female ones on the outside; the female panicle more compact, the heads larger, the florets all filiform, or with a few tubular male ones in the centre.

Preparation.—The fresh plant is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole, pour it into a well-stoppered bottle and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Amount of drug power, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

UPAS TIEUTE.**Synonym,** Strychnos Tieute, *Leschenault*.**Nat. Ord.,** Apocynaceæ.**Common Name,** Upas Tree.

Upas tieute is very poisonous, and has long been used by the natives of Java and other East India islands for poisoning their arrow-heads. It is obtained from the bark of the root of the climbing woody plant, growing exclusively in Java, and belonging to the genus *Strychnos*, specially designated by Leschenault as *Strychnos Tieute*. A decoction of the bark is concentrated to the consistence of syrup, then mixed with onions, garlic, pepper, etc., and allowed to stand until it becomes clear. Leschenault, having dipped the point of an arrow into the poison and allowed it to dry, pricked a chicken with it, which died in a minute or two of violent convulsions. MM. Delille and Magendie found that the poison had not lost its strength in four years.

Preparation for Homœopathic Use.—One part by weight of upas tieute is dissolved in fifty parts weight of alcohol.

Amount of drug power, $\frac{1}{100}$.Dilutions must be prepared as directed under Class VI— β .

URANIUM NITRICUM.

Synonyms, Uranic Nitrate. *Uranii Nitræs.*

Common Name, Nitrate of Uranium.

Formula, $\text{UO}_3 \cdot 2\text{NO}_3 \cdot 6\text{H}_2\text{O}$.

Origin and Preparation.—This salt may be prepared from pitchblende by dissolving the pulverized mineral in nitric acid, evaporating to dryness, adding water and filtering; the liquid yields, by due evaporation, crystals of uranic nitrate, which are purified by a repetition of the process, and, lastly, by dissolving in ether. This latter solution yields the pure nitrate.

Properties.—Uranic nitrate is in the form of lemon-yellow, prismatic, deliquescent crystals, soluble in water and alcohol. The preparation of this salt should be kept from the light.

Preparation for Homœopathic Use—The pure nitrate of uranium is triturated as directed under Class VII.

URTICA.

Synonyms, *Urtica Urens*, *Linn.* *Urtica Minora.*

Nat. Ord., Urticaceæ.

Common Names, Common Nettle. Dwarf Stinging Nettle.

This annual plant is common in waste places, along hedges and roadsides, throughout the greater part of Europe and Northern Asia, and has been thoroughly naturalized in North America where it is less abundant, however, than the taller perennial *Urtica Dioica*. It is covered with stinging hairs, and has opposite stipulate and petiolate leaves. The plant is from eight to twelve inches high. The leaves are one or two inches long, pale green, elliptic, deeply serrate, and almost five-nerved. The small and loose flower clusters appear in axillary pairs.

Preparation.—The entire fresh plant, gathered when in flower, is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole, pour it into a well-stoppered bottle, and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

URTICA DIOICA, Linn.

Nat. Ord., Urticaceæ.

Common Name, Great or Large Nettle.

This is a perennial, common in waste places, along hedges and roadsides, throughout the greater part of Europe and Northern Asia, and has been thoroughly naturalized in North America, where it is more abundant than the small annual *Urtica urens*. It is covered with stiff, stinging hairs, and has opposite stipulate and petiolate leaves. The plant is from two to three feet high. The leaves are two or three inches long, dark green above, whitish downy beneath, ovate or ovate-

lanceolate, heart-shaped, pointed and coarsely serrate. The small, greenish flowers are usually dioecious, in small clusters, and these are arranged in branching and hanging spikes.

Preparation.—The fresh herb, gathered when coming into flower, is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole, pour it into a well-stoppered bottle and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

USTILAGO MAYDIS.

Nat. Ord., Fungi.

Common Names, Maize Smut. Corn Smut.

This is a fungus found growing on the Indian corn.

Lea Mays.—It is often as large, sometimes larger than an orange. It is covered with a dark gray or brown epidermis, which bursts when ripe. The spores are spherical, minute, their surface covered with echinulate warts like prickles; they are deep-seated, nearly black and pulverulent, having the appearance of soot under the naked eye.

Preparation.—The fresh, just ripe fungus, is powdered and covered with five parts by weight of alcohol, and allowed to remain eight days in a well-stoppered bottle, in a dark, cool place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Amount of drug power, $\frac{1}{16}$.

Dilutions must be prepared as directed under Class IV.

Triturations of the ripe fungus are prepared as directed under Class VII.

UVA URSI.

Synonyms, *Arctostaphylos Uva Ursi, Sprengel.* *Arbutus Uva Ursi, Linn.* *Daphnidostaphylis Feudleri Ana.*

Nat. Ord., Ericaceæ.

Common Name, Bearberry.

The bearberry is a trailing, much branched, evergreen shrub, which is distributed throughout the northern portion of the Northern hemisphere, and grows in most parts of Europe, in Northern Asia, and throughout the North American continent as far south as New Jersey. It is found in dry, rocky, or sandy places, and in pine woods; southward it grows chiefly in hilly or mountainous regions. The leaves are nearly sessile, one inch or less in length, about one-quarter of an inch wide, obovate or oblong-spatulate, entire, and slightly revolute on the margin, obtuse or somewhat retuse at the apex, and almost wedge-shaped at the base. They have a leathery texture, a dark green, rather glossy upper surface, with depressed veins, and are paler, smooth and reticulately-veined beneath. The shrub bears short and drooping

racemes of from three to twelve whitish, urn-shaped flowers, and small, bright red drupes, containing five flattened nutlets, each with one seed. The flowers appear in May, and the fruit ripens in autumn.

Preparation.—The fresh leaves, gathered in autumn, are chopped and pounded to a pulp and weighed. Then take two-thirds by weight of alcohol and add it to the pulp, stirring and mixing it well, and then strain through a piece of new linen. The tincture thus obtained is allowed to stand eight days in a well-stoppered bottle, in a dark, cool place and then filtered.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class II.

VACCININUM.

Common Names, Vaccine Virus. Bovine Virus.

Preparation for Homœopathic Use.—The genuine vaccine matter, taken fresh from a healthy young heifer, is triturated as directed under Class VIII.

VALERIANA OFFICINALE, *Linn.*

Synonym, Phu Germanicum.

Nat. Ord., Valerianaceæ.

Common Name, Great Wild Valerian.

This is a large handsome herbaceous plant, a native of Europe. It has a perennial root, and an erect, round, channeled stem, from two to four feet high, furnished with opposite pinnate leaves, and terminating in flowering branches. The leaves of the stem are attached by short, broad sheaths; the radical leaves are larger and stand on long footstalks. In the former the leaflets are lanceolate and partially dentate, in the latter elliptical and deeply serrate. The flowers are small, white or rose-colored, agreeably odorous, and disposed in terminal corymbs, interspersed with pear-shaped pointed bracts. The fruit is a capsule containing one oblong-ovate, compressed seed. The plant is a native of Europe, where it grows either in damp woods and meadows, or on dry elevated grounds. The root, which is the officinal portion, is collected in spring before the stem begins to shoot, or in the autumn when the leaves decay. It should be dried quickly, and kept in a dry place. It consists of numerous long, slender, cylindrical fibres, issuing from a tuberculated head or rhizome. It has a peculiar odor, and at first a sweetish, afterwards bitter and aromatic taste.

Preparation.—The dried root, finely powdered, is covered with five parts by weight of alcohol and allowed to remain eight days in a well-stoppered bottle, in a dark, cool place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{16}$.

Dilutions must be prepared as directed under Class IV.

VARIOLINUM.

Common Name, Small-Pox Virus.

Preparation for Homœopathic Use—The contents of a ripe small-pox pustule are triturated as directed under Class VIII.

VERATRUM ALBUM, Linn.

Synonyms, *Elleborum Album*. *Helleborus Albus*.

Nat. Ord., *Melanthaceæ*.

Common Names, White Hellebore. European Hellebore.

This is a herbaceous perennial, growing in moist meadows of the Pyrenees and Alps, and eastward throughout Russia, Siberia, Northern China, and Japan. The stem is two to four feet high, and has numerous alternate elliptic, or broadly oval, entire leaves, which are about six inches long, strongly ribbed, and plicate, and sheathing at the base; the upper ones are smaller, narrower, and lanceolate in form. The inflorescence is a large racemose panicle, twelve to eighteen inches long, with polygamous flowers, having six spreading lance-oblong, yellowish-white, and externally green sepals. The three-horned fruit consists of three partly united follicles, containing numerous flattened and winged seeds. The root-stock is fusiform, fleshy, of a dull blackish-gray color externally, pale yellowish-gray within, tough, and resinous. It is beset with long cylindrical fibres of a grayish color, as well as some soft, fine, hair-like fibres. The root is inodorous; its taste is bitterish and burningly acrid.

Preparation.—The dried root, finely powdered, is covered with five parts by weight of alcohol and allowed to remain eight days in a well-stoppered bottle, in a dark, cool place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{10}$.

Dilutions must be prepared as directed under Class IV.

VERATRUM VIRIDE, Aiton.

Synonym, *Helonias Viridis*.

Nat. Ord., *Melanthaceæ*.

Common Names, American Hellebore. Swamp Hellebore. Indian Poke. Green Hellebore. Wolf's Bane.

The American hellebore has a perennial, thick, fleshy root or rhizome, the upper portion of which is tunicated, the lower solid, and beset with numerous whitish fibres or radicles. The stem is annual, round, striated, pubescent, and solid, from three to six feet in height, furnished with bright green leaves, and terminating in a panicle of greenish-yellow flowers. The leaves gradually decrease in size as they ascend. The lower are from six inches to a foot long, oval, acuminate, plaited, nerved, and pubescent; and embrace the stem at their base, thus affording it a sheath for a considerable portion of its length. Those on the upper part of the stem, at the origin of the flowering branches, are oblong-lanceolate. The panicle consists of numerous flowers, distributed in racemes with downy peduncles. Each flower is accompanied with a downy, pointed bract, much longer than its pedicel. There is no calyx, and the corolla is divided into six oval acute segments, thickened on the inside at their base, with the three alternate segments longer than the others. The six stamens have recurved filaments and roundish, two-lobed anthers. The germs are three, with re-

curved styles as long as the stamens. Some of the flowers have only the rudiments of pistils. Those on the upper end of the branchlets are barren, those on the lower portion fruitful. The fruit consists of three cohering capsules, separating at the top, opening on the inner side, and containing flat imbricated seeds.

This indigenous species of *veratrum* is found from Canada to the Carolinas, inhabiting swamps, wet meadows, and the banks of mountain streamlets. Early in the spring, before the stem rises, it bears a slight resemblance to the *Symplacarpus foetidus*, with which it is very frequently associated; but the latter sends forth no stem.

Preparation.—The fresh root, gathered in autumn, is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole, pour into a well-stoppered bottle and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Amount of drug power, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

VERBASCUM.

Synonyms, *Verbascum Thapsus*, Linn. *Thapsus Barbatus*.

Nat. Ord., Scrophulariaceæ.

Common Names, Mullein. *Blattaria*.

This plant is a native of Europe, but has become naturalized in North America, where it is found very frequently in fields, etc. The whole plant is densely woolly throughout; stem tall and stout, simple, winged by the decurrent bases of the oblong acute leaves; flowers (yellow, very rarely white) in a prolonged and very dense cylindrical spike; lower stamens usually beardless; pod globular, many-seeded.

Preparation.—The fresh plant, gathered when coming into bloom, is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole, pour it into a well-stoppered bottle, and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Amount of drug power, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

VERBENA HASTATA, Linn.

Nat. Ord., Verbenacæ.

Common Names, Blue Vervain. Purvain. Wild Hyssop.

This plant is indigenous to this country, where it is found very frequently on low and waste grounds. It is tall; from four to six feet high; leaves lanceolate or oblong-lanceolate, taper-pointed, cut-serrate, petioled, the lower often lobed and sometimes halberd-shaped at the

base; spikes linear, erect, densely flowered, corymbed or paniced. Flowers are produced all summer.

Preparation.—The fresh plant, in flower, is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole, pour it into a well-stoppered bottle and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Amount of drug power, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

VERBENA OFFICINALIS, *Linn.*

Synonym, Verbena Maris.

Nat. Ord., Verbenaceæ.

Common Names, Vervain. Verbena. White Vervain.

This plant grows in Germany and the south of Europe, in sandy places, along roads, hedges, and on heaps of rubbish. Stem is erect, from one to three feet high, loosely branched; leaves pinnatifid or three-cleft, oblong-lanceolate, sessile, smooth above, the lobes cut and toothed; spikes paniced, very slender; bracts small, much shorter than the very small purplish flowers. Flowers appear all summer.

Preparation.—The fresh herb, in flower, is chopped and pounded to a pulp and weighed. Then add two-thirds by weight of alcohol, stir well, and strain through a piece of new linen. The tincture thus obtained is allowed to stand eight days in a well-stoppered bottle in a dark, cool place, and then filtered.

Amount of drug power, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class II.

VERBENA URTICÆFOLIA, *Linn.*

Nat. Ord., Verbenaceæ.

Common Name, Nettle-Leaved or White Vervain.

This plant is found growing in old fields and roadsides in Mexico, West Indies and America. The stems are rather tall; leaves oval or oblong-ovate, acute, coarsely serrate, petioled; spikes very slender, at length much elongated, with the flowers remote, loosely paniced, very small, white.

Preparation.—The fresh plant, in flower, is chopped and pounded to a pulp and weighed. Then two-thirds by weight of alcohol are taken, and having mixed it well with the pulp, it is pressed out in a piece of new linen. This tincture is allowed to stand eight days in a well-stoppered bottle, in a dark, cool place and then filtered.

Amount of drug power, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class II.

VERONICA BECCABUNGA, Linn.

Synonyms, *Veronica Americana*. *Veronica Anagallis*.

Nat. Ord., Scrophulariaceæ.

Common Name, Brooklime.

It grows in Europe and Asia near springs and in brooks, and has a smooth stem, decumbent at the base, and then erect to the height of eight to fifteen inches, with opposite, short petiolate, oval or oblong, crenate-serrate, obtuse and smooth leaves, about one and a half inch long, and with axillary loose racemes of pale blue and veined flowers. It is inodorous, but has a bitterish, somewhat saline, and slightly pungent taste.

Preparation.—The fresh plant, gathered when in bloom, is chopped and pounded to a pulp and weighed. Then add two-thirds by weight of alcohol to the pulp, stirring and mixing well, and strain through a piece of new linen. The tincture thus obtained is allowed to stand eight days in a well-stoppered bottle, in a dark, cool place and then filtered.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class II.

VESPA CRABRO.

Class, Insecta.

Order, Hymenoptera.

Family, Vespariæ.

Common Name, Wasp.

The common wasp of Europe.

Preparation—Live wasps are put into a bottle, and after being aggravated by shaking, are drenched with five times their weight of strong alcohol and allowed to remain eight days, in a dark, cool place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Amount of drug power, $\frac{1}{10}$.

Dilutions must be prepared as directed under Class IV.

VIBURNUM OPULUS, Linn.

Synonyms, *Viburnum Edule*. *Viburnum Oxycoccus*.

Nat. Ord., Caprifoliaceæ.

Common Names, High Cranberry. Sheep's Berry. Snowball. This shrub has nearly smooth, upright stems, from five to ten feet high; leaves three to five-ribbed, strongly three-lobed, broadly wedge-shaped or truncate at the base, the spreading lobes pointed, mostly toothed on the sides, entire in the sinuses; petioles bearing two glands at the apex, cymes peduncled. Fruit spherical, pleasantly acid, bright red; the stone very flat, smooth and even, nearly orbicular; leaf-buds enclosed in one or two pairs of scales. It grows in low grounds, along streams; common northward and southward in the Alleghanies to the borders of Maryland.

Preparation.—The fresh bark of the root is pounded to fine pulp

and weighed. Then two parts by weight of alcohol are taken, and after thoroughly mixing the pulp with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole, pour it into a well-stoppered bottle and let it stand eight days, in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{4}$.

Dilutions must be prepared as directed under Class III.

VIBURNUM PRUNIFOLIUM, *Linn.*

Nat. Ord., Caprifoliaceæ.

Common Names, Black Haw. Plum-leaved Viburnum.

The black haw is a tall shrub or small tree from ten to twenty feet high, and grows in thickets throughout the greater portion of the United States east of the Mississippi. Its leaves are opposite, about two inches long, shining, oval or obovate, sharply serrulate, and have short, slightly margined petioles. The small white pentamerous flowers are in terminal cymes, have a wheel-shaped corolla, and produce small blue-black edible drupes containing a flattish smooth putamen.

Preparation.—The fresh ripe fruit is pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole, pour it into a well-stoppered bottle, and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Amount of drug power, $\frac{1}{4}$.

Dilutions must be prepared as directed under Class III.

VINCA MINOR, *Linn.*

Synonym, *Vinca Pervinca*.

Nat. Ord., Asclepiadaceæ.

Common Name, Lesser Periwinkle.

This evergreen is a native of Europe, and is found in shaded woods and stony slopes or hedges, and is also frequently reared in gardens for ornament. It has a creeping root-stock, long, trailing, barren shoots, with short, erect, flowering stems, about six inches high. Leaves are narrow-ovate or oblong, evergreen, shining, and perfectly glabrous, opposite and entire. Pedicels shorter than the leaves. Corolla small, blue, the tube broad, almost bell-shaped, with a flat spreading limb, with five broad, oblique segments, twisted in the bud; stamens five, enclosed in the tube. It differs from *Vinca Major* in its smaller size, more trailing habit, narrower leaves, which are perfectly glabrous, and shorter and broader segments to the calyx, without any hairs on their edges. The flowers appear in April and May.

Preparation.—The fresh plant, gathered at the beginning of flowering, is chopped and pounded to a pulp and weighed. Then add two-thirds by weight of alcohol to the pulp, stirring and mixing well together, and strain through a piece of new linen. The tincture thus

obtained is allowed to stand eight days in a well-stoppered bottle, in a dark, cool place, and then filtered.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class II.

VIOLA ODORATA, Linn.

Synonym, *Viola Imberis.* *Viola Suavis.*

Nat. Ord., *Violaceæ.*

Common Name, Sweet-scented Violet.

The sweet-scented violet is indigenous to Europe and Northern Asia, is frequently cultivated, and grows to a certain extent spontaneously in various parts of North America. It has an oblique rhizome, and produces long, filiform runners. The leaves are reniform or heart-shaped, obtuse and crenate. The flowers are dark blue, bearded, and have a very agreeable odor. Flowers appear in March and April.

Preparation.—The fresh plant, gathered when in flower, is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole, pour it into a well-stoppered bottle and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

VIOLA TRICOLOR, Linn.

Synonyms, *Viola Trinitatis.* *Jacea.*

Nat. Ord., *Violaceæ.*

Common Names, Pansy. Heart's Ease.

This is an annual or biennial, indigenous to Europe and Northern Asia, naturalized in the United States, and frequently cultivated in many varieties as an ornamental plant. It has a thin spindle-shaped root, and an erect or ascending angular and branching, nearly smooth stem. The leaves vary between roundish-cordate and oval, crenate nearly entire, are about an inch long, petiolate, and have prominent lyrate-pinnatifid stipules. The flowers are on long peduncles, and have the corolla partly yellowish, blue and purple, or occasionally yellowish, and in the cultivated varieties very variable. The herb is inodorous, and has a bitterish and slightly acrid taste. The flowers appear from April to September.

Preparation.—The fresh plants, gathered when in flower (those bearing yellow and blue flowers are preferable), are chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole, pour it into a well-stoppered bottle, and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

VIPERA REDI.

Class, Reptilia.

Order, Ophidia.

Family, Viperidæ.

Common Name, Italian Viper.

Short provings of the virus of this reptile are given in Jahr's Symptomen Codex.

Preparation.—The fresh poison is triturated as directed under Class VIII.

VIPERA TORVA.

Class, Reptilia.

Order, Ophidia.

Family, Viperidæ.

Common Name, German Viper.

Short provings of the virus of this reptile are given in Jahr's Symptomen Codex.

Preparation.—The fresh poison is triturated as directed under Class VIII.

VISCUM ALBUM, Linn.Synonym, *Viscum Flavescens*.

Nat. Ord., Loranthacæ.

Common Name, Mistletoe.

The mistletoes are small parasitic evergreen shrubs, growing mostly upon deciduous-leaved trees, and penetrating with their simple roots through the bark into the wood. *Viscum album* is indigenous to Europe, and is chiefly found upon apple, pear, plum and similar trees, but grows also upon poplars, birches, beeches and others. The shrub is of a yellowish-green color, one-half to two feet high, much branched, jointed, and have opposite, often scale-like leaves and monœcious or diœcious flowers in small clusters or short spikes. The leaves are entire, varying from narrow oblong to nearly obovate, thick and fleshy, and always obtuse. Berry white, semi-transparent, enclosing a single seed, surrounded by a very glutinous pulp.

Preparation.—Equal parts of the fresh berries and leaves are chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole, pour it into a well-stoppered bottle and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{4}$.

Dilutions must be prepared as directed under Class III.

VITIS VINIFERA, Linn.

Nat. Ord., Vitacæ.

Common Name, Common Grape Wine.

The common grape vine is a native of Central Asia, but has become naturalized in nearly all temperate climates. Leaves cordate, sinuately five-lobed, glabrous or tomentose; flowers all perfect. By cultivation it sports into endless varieties, differing in the form, color, size and flavor of the fruit, and in respect to the hardness of its constitution. In New England its cultivation is chiefly confined to the garden and as a dessert fruit; but there are extensive vineyards in the Middle and Western States for the production of wine. The vine is propagated by cuttings. Varieties without end may be raised from the seed, which will bear fruit the fourth or fifth year. A vineyard, it is said, will continue to produce fruit for two hundred years.

Preparation.—The fresh leaves are chopped and pounded to a pulp and pressed out in a piece of new linen. The expressed juice is then, by brisk agitation, mingled with an equal part by weight of alcohol. This mixture is allowed to stand eight days, in a dark, cool place, in a well-stoppered bottle and then filtered.

Amount of drug power, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class I.

VULPIS FEL.

From *Canis Vulpes*.

Class, Mammalia.

Order, Carnivora.

Family, Canina.

Common Name, Fox-gall.

Preparation.—The fresh gall is triturated as directed under Class IX.

VULPIS HEPAR.

From *Canis Vulpes*.

Class, Mammalia.

Order, Carnivora.

Family, Canina.

Common Name, Fox-liver.

Preparation.—The fresh liver is triturated as directed under Class IX.

VULPIS PULMO.

Synonym, Pulmo Vulpis. From *Canis Vulpes*.

Class, Mammalia.

Order, Carnivora.

Family, Canina.

Common Name, Fox-lungs.

Preparation.—The fresh lungs are triturated as directed under Class IX.

WYETHIA HELENIOIDES, *Nuttall*.

Synonyms, *Alarzon* *Helenioides*, *Decandoell*. *Melartizainuloides*, *Kellogg*.

Nat. Ord., Compositæ.

Soft-tomentos, or with age becoming almost glabrous, a foot or two high; leaves oblong or oval; radical ones a foot or more long, four to six inches wide; cauline about half the size, all contracted at base into a short petiole; heads mostly leafy at base; outer scales of the involucre ovate-lanceolate or ovate, sometimes toothed; akenes more or less pubescent at top when young. This perennial inhabits hillsides; common near San Francisco and through the valley of the Sacramento.

Preparation.—The fresh root is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole well, pour it into a well-stoppered bottle, and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Drug power of tincture, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

XANTHIUM SPINOSUM, *Linn*.

Nat. Ord., Ambrosiaceæ.

Common Names, Spiny Clobur.

This plant is indigenous to Southern Europe, but has become somewhat naturalized in the United States and most civilized countries, and grows in waste places and neglected fields. The stem is about two feet high, and has shortly petiolate, lanceolate or ovate-lanceolate leaves, which are either cut-toothed or the upper ones entire, and have at the base sharp, three-forked, yellowish, stipulate spines, nearly an inch long. The fertile axillary burs are crowned with one inconspicuous beak.

Preparation.—The fresh herb, in flower, is chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken, and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole, pour it into a well-stoppered bottle and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Amount of drug power, $\frac{1}{2}$.

Dilutions must be prepared as directed under Class III.

XANTHOXYLUM FRAXINEUM, *Willdenow*.

Synonyms, *Xanthoxylon Americanum*, *Miller*. *Hylax Fraxineum*.

Nat. Ord., Rutaceæ.

Common Names, Prickly Ash. Pellitory. Suterberry. Yellow Wood.

This is a shrub from five to ten feet in height, with alternate branches, which are covered with strong, sharp, scattered prickles.

The leaves are alternate and pinnate, consisting of four or five pairs of leaflets, and an odd terminal one, with a common footstalk, which is sometimes prickly on the back, and sometimes unarmed. The leaflets are nearly sessile, ovate, acute, slightly serrate, and somewhat downy on their under surface. The flowers, which are small and greenish, are disposed in sessile umbels near the origin of the young shoots. The plant is polygamous; some shrubs bearing both male and perfect flowers, others only female. The number of stamens is five; of the pistils three or four in the perfect flowers, about five in the pistillate. Each fruitful flower is followed by as many capsules as it had germs. These capsules are stipitate, oval, punctate, of a greenish-red color, with two valves and one oval blackish seed. This species of *xanthoxylum* is indigenous, growing in woods and in moist shady places throughout the Northern, Middle and Western States. The flowers appear in April and May, before the foliage. The bark, as found in the shops, is in quills, from one or two lines to nearly an inch in diameter, thin, externally of a darkish gray color diversified by whitish patches, with the epidermis in many pieces marked by closely set transverse cracks, internally finely striated longitudinally and somewhat shining, and, when derived from the smaller branches, exhibiting occasionally remains of the prickle. The bark is nearly or quite inodorous, and of a taste which is at first sweetish and slightly aromatic, then bitterish, and ultimately acrid.

Preparation.—The fresh bark, in coarse powder, is covered with two parts by weight of alcohol, and allowed to remain eight days in a well-stoppered bottle, in a dark, cool place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, $\frac{1}{4}$.

Dilutions must be prepared as directed under Class III.

YUCCA.

Synonym, *Yucca Filamentosa*, Linn.

Nat. Ord., Liliaceæ.

Common Names, Bear Grass. Adam's Needle.

This plant is found growing in sandy soil, in East Virginia and southward, where it is called *Spanish Bayonet*. Its trunk, rising from a running rootstalk to a height of a foot or less above the ground, is covered with the lanceolate, unarmed, coriaceous leaves, which bear filaments on their margins; the leaves are from one to two feet long. The scape-like flower-stem is from six to eight feet high, erect, and terminated by an ample compound panicle of showy (often polygamous) flowers. Perianth of six petal-like (white) oval or oblong and acute flat sepals, withering-persistent, the three inner broader, longer than the six stamens. Stigmas three, sessile. Pod oblong, somewhat six-sided, three-celled, or imperfectly six-celled by a partition from the back, fleshy, at length loculicidally three-valved from the apex. Seeds very many in each cell, depressed. Flowers appear in July.

Preparation.—The fresh roots and leaves are chopped and pounded to a pulp and weighed. Then two parts by weight of alcohol are taken,

and having mixed the pulp thoroughly with one-sixth part of it, the rest of the alcohol is added. After having stirred the whole, pour it into a well-stoppered bottle, and let it stand eight days in a dark, cool place. The tincture is then separated by decanting, straining and filtering.

Amount of drug power, $\frac{1}{4}$.

Dilutions must be prepared as directed under Class III.

ZINCUM.

Synonyms, Zincum Metallicum. Stannum Indicum.

Common Names, Zinc. Metallic Zinc.

Symbol, Zn.

Atomic Weight, 65.

Origin of Zinc.—Zinc is a rather abundant metal, and exists in the metallic state in Australia, but it is most generally met with in combination either as silicate or carbonate, known as *calamine*, or as sulphide, known as *blende*. Zinc ores have been found in Pennsylvania and Missouri, in Great Britain and different parts of Germany, particularly in Silesia. They are frequently associated with lead and other metals.

Preparation of Zinc.—On smelting lead and other ores containing zinc, an impure oxide of zinc is condensed in the cooler portions of the furnace. By the long continued roasting of *blende* or *calamine*, oxide is likewise obtained. This is mixed with powdered charcoal, and the mixture heated nearly to whiteness in shallow iron retorts, when the zinc distils, and is collected in suitable condensers. The impure metal is purified by a descending distillation in crucibles furnished with an open tube reaching to the upper half of the crucible and passing through its bottom.

Properties.—Zinc is a bluish-white metal, having a lamellar or a granular structure. Its density varies between 6.9 and 7.2. Ordinarily it is rather brittle, but between 120° and 150° C. (248° and 302° F.) it is ductile, and may be rolled into sheets and converted into wire. Heated to 205° C. (401° F.), it becomes so brittle that it may be reduced to powder. It melts at about 410° C. (770° F.), and at near a white heat it boils and volatilizes, and in the presence of air burns with a bluish-green flame to oxide. Melted zinc on congealing contracts considerably. On bending, zinc emits a slight cracking noise, weaker than that of tin. It has a bright metallic lustre; but, on exposure, becomes superficially tarnished. It is not much acted on by cold concentrated sulphuric acid; but, on heating, unites with it, evolving sulphurous acid gas. Diluted sulphuric and hydrochloric acids dissolve it readily, with the evolution of hydrogen.

Preparation for Homœopathic Use.—The pure metal, heated to 401° F. and finely powdered, is triturated as directed under Class VII.

ZINCUM ACETICUM.

Synonyms, Zinci Acetas. Zincic Acetate.

Common Name, Acetate of Zinc.

Formula, $\text{Zn} (\text{C}_2 \text{H}_3 \text{O}_2)_2 \cdot 3 \text{H}_2\text{O}$.

Molecular Weight, 237.

Preparation of Acetate of Zinc.—Take of commercial oxide of zinc, two troy ounces; acetic acid, distilled water, each five fluid ounces. Mix the acid and water, and digest the oxide of zinc in the mixture for half an hour, then heat to the boiling point, filter while hot, and set aside to crystallize. Drain the crystals in a funnel, and dry them upon bibulous paper.

Properties.—Acetate of zinc crystallizes in soft white pearly six-sided tables or scales, which have a sharp metallic taste, and on exposure to the air lose their transparency from the evaporation of some acid and water of crystallization. When heated, the crystals melt, and at a higher heat the salt is decomposed. At ordinary temperatures it dissolves in three parts of water, and in a much smaller quantity at the boiling point. It requires about thirty parts of alcohol for solution. Treated with sulphuric acid the salt is decomposed with the evolution of acetic acid.

Tests.—On passing an excess of sulphydric acid gas through the aqueous solution a white precipitate of sulphide of zinc is obtained, and the filtrate on being evaporated leaves no fixed residue (*absence of other metals*). The aqueous solution is not precipitated by nitrate of barium (*sulphate*) or nitrate of silver (*chloride*); it yields with solution of potassa or ammonia a white precipitate, which is dissolved by an excess of the alkaline liquid, and this solution yields again a white precipitate on the addition of sulphydric acid (*other metals*). *Magnesia* may be detected in the aqueous solution after rendering it alkaline with ammonia, by adding a drop of phosphoric acid, when a white precipitate will be produced; or the zinc is first completely precipitated by sulphhydrate of ammonium, and the filtrate after having been boiled is tested with phosphate of ammonium, when ammonio-phosphate of magnesium will be deposited. *Lead*, if present, will yield a white precipitate with dilute sulphuric acid, and in the solution acidulated with hydrochloric acid, a black precipitate with sulphuretted hydrogen.

Preparation for Homœopathic Use.—Pure acetate of zinc is triturated as directed under Class VII.

ZINCUM BROMATUM.

Synonym, Zinci Bromidum.

Common Name, Bromide of Zinc.

Formula, Zn Br_2 .

Molecular Weight, 225.

Preparation and Properties of Bromide of Zinc.—It is most conveniently prepared by digesting granulated zinc in hydrobromic acid, in which it dissolves with the evolution of hydrogen; the filtered solution is carefully concentrated, acidulated with a little hydrobro-

mic acid, and dried by the heat of a water-bath. It is a white deliquescent salt, having a sweet and styptic taste, melts when heated to a colorless or yellowish liquid, and sublimes in white needles. It is freely soluble in water, and dissolves also in alcohol and ether.

Preparation for Homœopathic Use.—Bromide of zinc is triturated, as directed under Class VII, but owing to the deliquescence of the salt, the first decimal will not keep well.

ZINCUM CARBONICUM.

Synonyms, Zinci Carbonas. Zinci Carbonas Præcipitata.

Common Names, Carbonate of Zinc. Precipitated Carbonate of Zinc.

Formula, $\text{Zn CO}_3 (\text{ZnO})_2 \cdot 3\text{H}_2\text{O}$.

Molecular Weight, 341.

Preparation of Carbonate of Zinc.—Take of sulphate of zinc, carbonate of sodium, each twelve troy ounces; water, eight pints. Dissolve the salts separately, with the aid of heat, each in four pints of the water. Then mix the solutions, and, having stirred the mixture, set it by that the precipitate may subside. Lastly, having poured off the supernatant liquid, wash the precipitate with hot water until the washings are nearly tasteless, and dry it with a gentle heat.

Properties.—Carbonate of zinc is a soft, white, inodorous and tasteless powder, insoluble in water, but dissolving readily in acetic and dilute mineral acids with the evolution of carbonic acid gas. When heated in a crucible to redness it parts with its water and carbonic acid, and leaves about 70 per cent. of oxide of zinc.

Tests.—The solution of carbonate of zinc in dilute nitric acid should not be precipitated by nitrate of barium (absence of *sulphate*), or by nitrate of silver (absence of *chloride*). Mixed with an excess of carbonate of ammonium, the solution should yield a clear liquid (absence of *calcium* compounds), which is not precipitated by a drop of phosphoric acid (*magnesia*), and which yields a white precipitate with sulphuretted hydrogen.

Preparation for Homœopathic Use.—Pure carbonate of zinc is triturated, as directed under Class VII.

ZINCUM CHLORATUM.

Synonyms, Zinci Chloridum. Zincum Muriaticum.

Common Name, Chloride of Zinc.

Formula, Zn Cl_2 .

Molecular Weight, 136.

Preparation of Chloride of Zinc.—Take of zinc in small pieces, six troy ounces; nitric acid, precipitated carbonate of zinc, each one hundred and fifty grains; muriatic acid, distilled water, each a sufficient quantity. To the zinc, contained in a glass or porcelain vessel, add gradually enough muriatic acid to dissolve it; then strain the solution, add the nitric acid, and evaporate to dryness. Dissolve the dry mass in five fluidounces of distilled water, add the precipitated

carbonate of zinc, and agitate the mixture occasionally during twenty-four hours; then filter and evaporate the solution to dryness in an evaporating dish, fuse the dry mass, pour the liquid on a flat stone, and when it has congealed, break the mass in pieces and keep the fragments in a well-stoppered bottle.

Properties.—Chloride of zinc is either in the form of a white powder or in opaque tablets or rods. It has a strongly caustic and metallic taste, is very deliquescent on exposure, and, when heated, melts and is subsequently volatilized, forming white fumes and leaving a yellowish residue; but when heated in a current of chlorine gas, the salt sublimes in acicular crystals. Chloride of zinc usually yields with water a somewhat turbid solution from the presence of variable quantities of oxychloride; the solution dissolves starch, paper, and other organic compounds, and should therefore be filtered through asbestos or gun cotton, but not through paper if a white salt is desired. Chloride of zinc dissolves also freely in alcohol, and somewhat less freely in ether. In contact with sulphuric acid it is converted into sulphate of zinc. Its solutions yield white precipitates with sulphhydrate of ammonium and with nitrate of silver. On mixing a concentrated solution of zinc chloride with oxide of zinc, a plastic mass of oxychloride of zinc is obtained which soon hardens.

Tests.—The solution of chloride of zinc in water acidulated with hydrochloric acid should yield no precipitate with sulphuretted hydrogen (*lead and similar metals*). With an excess of ammonium carbonate a clear solution should be obtained (*aluminum, iron, calcium, etc.*), which is not precipitated by a drop of phosphoric acid (*magnesium*), and yields with sulphuretted hydrogen or sulphhydrate of ammonium a white precipitate; the filtrate from which, on being evaporated and ignited leaves no residue (*potassium, sodium*).

Preparation for Homœopathic Use.—Pure chloride of zinc is triturated, as directed under Class VII, but owing to the deliquescence of the salt, the lower triturations will not keep well.

ZINCUM FERROCYANATUM.

Synonym, Zinci Ferrocyanidum.

Common Name, Ferrocyanide of Zinc.

Preparation and Properties of Ferrocyanide of Zinc.—It is prepared by precipitating a soluble zinc salt with ferrocyanide of potassium, and forms a white tasteless powder, which is insoluble in water, alcohol and dilute acids, and evolves hydrocyanic acid on being heated with dilute sulphuric acid.

Preparation for Homœopathic Use.—Ferrocyanide of zinc is triturated as directed under Class VII.

ZINCUM HYDROCYANICUM.

Synonyms, Zinci Cyanidum. Zincum Cyanuretum.

Common Name, Cyanide of Zinc.

Formula, Zn (C N)_2 .

Preparation and Properties of Cyanide of Zinc.—It is obtained by precipitating a solution of acetate of zinc with hydrocyanic acid, whereby acetic acid is liberated, which retains a portion of the zinc cyanide in solution; the liquid should therefore be kept nearly neutral by the occasional cautious addition of an alkali. Cyanide of zinc is a white inodorous and tasteless powder, which is insoluble in water and alcohol, but dissolves in potassa, ammonia and dilute acids. When long kept it undergoes decomposition, and acquires a sweetish and metallic taste.

Preparation for Homœopathic Use.—Pure cyanide of zinc is triturated as directed under Class VII.

ZINCUM IODATUM.

Synonyms, Zinci Iodidum. Zincic Iodide.

Common Name, Iodide of Zinc.

Formula, Zn I_2 .

Molecular Weight, 319.

Preparation and Properties of Iodide of Zinc.—On digesting four parts of iodine with a little more than one part of granulated zinc and twenty parts of water, until the liquid has become colorless, a solution is obtained which, on evaporation to dryness, yields the salt as a white deliquescent powder; too long continued digestion will yield a sparingly soluble oxyiodide. Iodide of zinc is freely soluble in water, and on careful evaporation and cooling of the solution, may be obtained in octohedral or cubical crystals.

Preparation.—Iodide of zinc is triturated as directed under Class VII.

ZINCUM OXYDATUM.

Synonyms, Zincum Oxydatum Purum. Zinci Oxidum. Calx Zinci. Lana Philosophica. Nihilum Album. Pompholyx.

Common Name, Oxide of Zinc.

Formula, Zn O .

Molecular Weight, 81.

Preparation of Oxide of Zinc.—Take of precipitated carbonate of zinc, twelve troy ounces. Expose it in a shallow vessel to a low red heat until the water and carbonic acid are wholly expelled.

Properties.—Oxide of zinc is a soft, inodorous and tasteless, pale yellowish, nearly white powder, which, on being heated, acquires a deep lemon-yellow color, and on cooling becomes again nearly white. After having been heated to bright redness it continues for some time to emit light in the dark. It dissolves in dilute acetic and other acids, is completely insoluble in simple solvents, and is without action on test-paper. According to Daubrée it may be obtained crystallized by heating chloride of zinc in a current of steam. On exposure to the atmosphere it slowly absorbs water and combines very gradually with carbonic acid.

Tests.—Oxide of zinc may contain traces of chloride or sulphate,

which are detected in the solution in dilute nitric acid by the white precipitates produced with nitrate of silver and nitrate of barium. The liquid obtained on boiling oxide of zinc with water and filtering ought not to have an alkaline reaction from the presence of carbonate of sodium. The solution of the oxide in hydrochloric acid should not assume a red color on the addition of sulphocyanide of potassium (*iron*), should not be colored or precipitated by sulphydric acid (*lead* and similar metals), and should be completely precipitated with a white color by sulphhydrate of ammonium; the filtrate from this precipitate, after having been boiled, should not be disturbed on the addition of oxalate of ammonium (*calcium*) or of phosphate of ammonium (*magnesium*).

Preparation for Homœopathic Use.—Pure oxide of zinc is triturated as directed under Class VII.

ZINCUM PHOSPHATUM.

Synonym, Zinci Phosphidum.

Common Names, Phosphide of Zinc. Phosphuret of Zinc.

Formula, $Zn_3 P_2$.

Molecular Weight, 257.

Preparation of Phosphide of Zinc.—If zinc is fused in a crucible and phosphorus is added in small pieces at a time, the crucible being kept covered as much as possible, a union of the two elements takes place; but it is difficult to obtain the compound of uniform composition. According to Schrötter (1849), finely-divided zinc is heated to dull redness, while the vapor of phosphorus is being passed over it. Vigier's modification of this process consists in heating the zinc in a current of hydrogen; after all atmospheric air has been expelled, vapors of phosphorus are passed over the zinc. On account of the great danger connected with this process, owing to the liability to violent explosions, Proust (1869) proposed the following process: Nitrogen gas is evolved by heating nitrite of ammonium, and the gas is passed through a bottle in which phosphoretted hydrogen is prepared by introducing phosphide of calcium through a wide tube into diluted hydrochloric acid contained in the bottle. The mixed gases are passed through a wash-bottle into a porcelain tube in which zinc is heated to redness, when the metal will combine with the phosphorus, and the liberated hydrogen will escape together with the nitrogen. If the apparatus is filled with nitrogen gas before phosphoretted hydrogen is generated, there is no danger of an explosion.

Properties.—Phosphide of zinc is a gray crystalline or friable mass, having upon the fractured surface a bright metallic lustre. Vigier (1875) recommends it to be powdered and freed by sifting from metallic zinc which may be present; in this state it resembles iron reduced by hydrogen, and is readily soluble in dilute hydrochloric acid, with the copious evolution of phosphoretted hydrogen. It melts at a higher temperature than zinc and is volatile. Pure phosphide of zinc consists of 24.12 per cent. of phosphorus and 75.88 per cent. of zinc.

Preparation for Homœopathic Use.—Pure phosphide of zinc is triturated as directed under Class VII.

ZINCUM SULPHURICUM.

Synonyms, Zinc Sulphas. Vitriolum Album. Zincic Sulphate.

Common Names, Sulphate of Zinc. White Vitriol.

Formula, $\text{Zn SO}_4 \cdot 7\text{H}_2\text{O}$.

Molecular Weight, 287.

Preparation of Sulphate of Zinc.—Take of granulated zinc, sixteen ounces; sulphuric acid, twelve fluid ounces; distilled water, four pints; solution of chlorine, a sufficiency; carbonate of zinc, one-half ounce, or a sufficiency. Pour the sulphuric acid, previously mixed with the water, on the zinc contained in a porcelain basin, and, when effervescence has nearly ceased, aid the action by a gentle heat. Filter the fluid into a gallon bottle, and add gradually with constant agitation the solution of chlorine until the fluid acquires a permanent odor of chlorine. Add now with continued agitation the carbonate of zinc until a brown precipitate appears; let it settle, filter the solution, evaporate until a pellicle forms on the surface, and set aside to crystallize. Dry the crystals by exposure to the air on filtering paper placed on porous tiles. More crystals may be obtained by again evaporating the mother liquor.

Properties.—Sulphate of zinc crystallizes readily in large, transparent rhombic prisms, which are isomorphous with those of sulphate of magnesium. As seen in commerce it is in small prismatic crystals, obtained by disturbed crystallization from concentrated solutions. On exposure, the crystals become slowly opaque from the loss of water of crystallization, of which six molecules or 37.6 per cent. are given off at 100°C. 212°F. ; the last portion, amounting to 6.3 per cent., is expelled at a low red heat, or at 110°C. 230°F. , in a current of dry air. Sulphate of zinc has a strong metallic styptic taste. According to Poggiale, 100 parts of water dissolve at 10°C. (50°F.) 138.2 parts; at 20°C. (68°F.) 161.5 parts; at 50°C. (122°F.) 263.8 parts; and at 100°C. (212°F.) 653.5 parts of the crystallized salt. Supersaturated solutions are easily obtained, particularly if in contact with air which has been previously filtered through cotton. One hundred parts of 40 per cent. alcohol dissolve, according to Schiff, only 3.48 parts of the salt, and in stronger alcohol it is insoluble. The aqueous solution of sulphate of zinc yields white precipitates with chloride of barium and with sulphhydrate of ammonium.

Tests.—The solution of sulphate of zinc in water, after having been precipitated by sulphhydrate of ammonium, should yield a filtrate which on evaporation to dryness and ignition must leave no fixed residue (potassium, sodium, magnesium, and other salts). If acidulated with sulphuric acid and treated with sulphuretted hydrogen, no coloration or precipitate should be occasioned (arsenic, copper, and similar metals). In case iron be present, the solution will afford, with a little ferrocyanide of potassium, a more or less deep blue precipitate. An excess of ammonia added to the aqueous solution ought to yield a clear

and colorless liquid; in the presence of copper the color of the solution would be blue.

Preparation for Homœopathic Use.—Pure sulphate of zinc is triturated as directed under Class VII.

ZINCUM VALERIANICUM.

Synonyms, Zinci Valerianas. Zincic Valerianate.

Common Names, Valerianate of Zinc.

Formula, $\text{Zn}(\text{C}_5\text{H}_9\text{O}_2)_2 \cdot \text{H}_2\text{O}$.

Molecular Weight, 285.

Preparation of Valerianate of Zinc.—Take of valerianate of sodium, five ounces (avoird.); sulphate of zinc, five and three-quarter ounces; distilled water, a sufficient quantity. Dissolve the salts separately, each in two pints (imperial) of distilled water, raise both solutions to near the boiling point, mix them, cool and skim off the crystals which are produced. Evaporate the mother-water at a heat not exceeding 200°F . to four fluid ounces, cool again, remove the crystals which have formed and add them to those which have already been obtained. Drain the crystals on a paper filter, and wash them with a small quantity of cold distilled water till the washings give but a very feeble precipitate with chloride of barium. Let them now be again drained and dried on filtering paper at ordinary temperature.

Properties.—Valerianate of zinc crystallizes in soft, white, pearly scales, which have a slight odor of valerianic acid, and an astringent and sweet taste. It has an acid reaction on litmus paper, melts at about 140°C . (284°F .), at a higher heat gives off white vapors, and finally burns with a bluish flame, leaving oxide of zinc. According to Lieben and Rossi (1871), 100 parts of water dissolve at 25°C . (77°F .) 2.54 parts of valerianate of zinc. On heating the solution moderately, it becomes turbid, and clear again on cooling; but after the saturated solution has been boiled, it does not become entirely clear after cooling, in consequence of the production of a basic salt, which is less freely soluble in water. The salt is also soluble in cold alcohol, and this solution is likewise rendered turbid by heat. Hot ether, however, dissolves it more freely than cold ether. When kept over sulphuric acid the salt becomes anhydrous.

Tests.—Valerianate of zinc should be completely soluble in ammonia water. Its aqueous solution yields a white precipitate with sulphuretted hydrogen, and when an excess of the reagent has been used, the filtrate on being evaporated should leave no fixed residue. *Acetate of zinc* being freely soluble in water, if present as an adulteration, would impart a red color to solution of ferric chloride.

Butyrate of zinc resembles the valerianate closely; it is detected, according to the British Pharmacopœia, by distilling the suspected salt with dilute sulphuric acid and adding the distillate to a solution of acetate of copper, when, if the valerianate be pure, it does not immediately affect the transparency of the fluid, but forms, after a little time, oily drops, which gradually pass into a bluish-white crystalline

deposit. According to the German Pharmacopœia the salt should yield nearly 30 per cent. of oxide of zinc.

Preparation for Homœopathic Use.—Pure valerianate of zinc is triturated, as directed under Class VII.

ZINGIBER OFFICINALE, *Roscoe.*

Synonyms, *Annonum Zingiber, Linn.* *Gingiber Albus.* *Gingiber Nigra.*

Nat. Ord., *Zingiberaceæ.*

Common Name, *Ginger.*

The ginger plant is a perennial herb, indigenous to tropical Asia, and at the present time cultivated in most tropical countries; but it is not known in the wild state. It has numerous stems, about three or four feet high, and covered with elongated leaf-sheaths, of which the upper ones have a lance-linear spreading blade eight or twelve inches long. The flowering stems are much shorter, have a few loose leaf-sheaths, and are terminated by a short, thick spike of bracted yellow and variegated flowers. The roots of the ginger plant as found in commerce are in irregular-lobed decorticated pieces, three or four inches long, sub-compressed, blackish-gray or brownish externally, and yellowish-white within, of a strong, aromatic odor, and hot, biting taste. The quite white ginger cannot be used for medicinal purposes, because the supposition is against it, of having been bleached by art.

Preparation.—The dried root, finely powdered, is covered with five parts by weight of alcohol, and allowed to remain eight days in a well-stoppered bottle, in a dark, cool place, being shaken twice a day. The tincture is then poured off, strained and filtered.

Drug power of tincture, *††.*

Dilutions must be prepared as directed under Class IV.

APPENDIX.

In this place we propose to mention such preparations as are frequently called for, yet are not entitled to a place in the pharmacopœia proper.

ISOPATHIC REMEDIES OR NOSODES.

Under this heading are embraced all medicines prepared from morbid products of the animal system. Some of these remedies have been so generally adopted that they have been mentioned in the body of the work, viz.: Lyssin, Psorinum, etc. As there is only an occasional call for the others, we shall merely give a list of those most likely to be inquired for.

ANTHRACIN,	GLANDERIN,	SYPHILINUM,
BALANORRHINE,	GONORRHIN,	MALANDRINUM,
BOVILUINUM,	LEUCORRHIN,	SYCOTINUM,
CARCINOMIN,	ODONTENECROSINE,	BUBOINUM.

For Homœopathic Use the morbid products are triturated and potentized on the centesimal scale according to Class IX—*a*.

ECLECTIC PREPARATIONS OF MEDICINAL PLANTS, SO-CALLED "RESINOIDS," OR "ACTIVE PRINCIPLES."

Under the name of *Resinoids* a line of preparations has been originated and brought into extensive use by eclectic physicians. These consist of precipitates in the form of powder obtained by mixing a strong alcoholic tincture of any given plant or part of a plant with three or four times its bulk of water, by which process all constituents soluble in alcohol only are precipitated. These precipitates are then collected, dried and pulverized, and are known to commerce and the medical profession under the general name of *Resinoids*, it being claimed that these preparations embody and constitute the "active principles" of the respective plants. No definite directions or generally adopted rules for the preparation of these remedies have been published, and every manufacturer seems to be guided by his individual experience.

The use of these eclectic preparations among homœopathic practitioners has greatly diminished of late years, as it is generally observed that well prepared homœopathic tinctures made from fresh succulent

plants, give better satisfaction than these precipitates which are made, without exception, from dried materials.

Preparation for Homœopathic Use.—We prepare triturations in the usual manner according to Class VII.

Below we give a list of these preparations with the names of the plants from which they are derived.

ACONITIN,	derived from	<i>Aconitum napellus.</i>
ALETRIN,	" "	<i>Aletris farinosa.</i>
ALNIN,	" "	<i>Alnus rubra.</i>
AMPELOPSIN,	" "	<i>Ampelopsis quinquefolia.</i>
APOCYNIN,	" "	<i>Apocynum Cannabinum.</i>
ATROPIN,	" "	<i>Atropa belladonna.</i>
ASCLEPIN,	" "	<i>Asclepias tuberosa.</i>
BAPTISIN,	" "	<i>Baptisia tinctoria.</i>
CAULOPHYLLIN,	" "	<i>Caulophyllum thalictroides.</i>
CERASIN,	" "	<i>Cerasus Virginiana.</i>
CHELONIN,	" "	<i>Chelone glabra.</i>
CHIMAPHILIN,	" "	<i>Chimaphila umbellata.</i>
CHIONANTHIN,	" "	<i>Chionanthus Virginica.</i>
COLLINSONIN,	" "	<i>Collinsonia Canadensis.</i>
CORNIN,	" "	<i>Cornus Florida.</i>
CORYDALIN,	" "	<i>Corydalis formosa.</i>
CYPRIPEDIN,	" "	<i>Cypripedium pubescens.</i>
DIGITALIN,	" "	<i>Digitalis purpurea.</i>
DIOSCORIN,	" "	<i>Dioscorea villosa.</i>
EUONYMIN,	" "	<i>Euonymus atropurpureus.</i>
EUPATORIN (Perf.)	" "	<i>Eupatorium perfoliatum.</i>
EUPATORIN (Purp.)	" "	<i>Eupatorium purpureum.</i>
FRASERIN,	" "	<i>Frasera Carolinensis.</i>
GEISEMIN,	" "	<i>Gelsemium sempervirens.</i>
GERANIN,	" "	<i>Geranium maculatum.</i>
GOSSYPIN,	" "	<i>Gossypium herbaceum.</i>
HAMAMELIN,	" "	<i>Hamamelis Virginica.</i>
HELONIN,	" "	<i>Helonias dioica.</i>
HYDRASTIN,	" "	<i>Hydrastis Canadensis.</i>
HYOSCYAMIN,	" "	<i>Hyoscyamus niger.</i>
IRISIN,	" "	<i>Iris versicolor.</i>
JUGLANDIN,	" "	<i>Juglans cinerea.</i>
LEONTODIN,	" "	<i>Leontodon taraxacum.</i>
LEPTANDRIN,	" "	<i>Leptandra Virginica.</i>
LOBELIN,	" "	<i>Lobelia inflata.</i>
LYCOPIN,	" "	<i>Lycopus Virginicus.</i>
MACROTIN,	" "	<i>Cimicifuga racemosa.</i>
MENISPERMIN,	" "	<i>Menispermum Canadensis.</i>
MYRICIN,	" "	<i>Myrica cerifera.</i>
PHYTOLACCIN,	" "	<i>Phytolacca decandra.</i>
POPULIN,	" "	<i>Populus tremuloides.</i>
PODOPHYLLIN,	" "	<i>Podophyllum peltatum.</i>
PTELEIN,	" "	<i>Ptelea trifoliata.</i>

RUMIN,	derived from	<i>Rumex crispus.</i>
SANGUINARIN,	" "	<i>Sanguinaria Canadensis.</i>
SCUTELLARIN,	" "	<i>Scutellaria laterifolia.</i>
SENECIN,	" "	<i>Senecio gracilis.</i>
STILLINGIN,	" "	<i>Stillingia sylvatica.</i>
TRILLIN,	" "	<i>Trillium pendulum.</i>
VERATRIN,	" "	<i>Veratrum viride.</i>
VIBURNIN,	" "	<i>Viburnum opulus.</i>
XANTHOXYLLIN,	" "	<i>Xanthoxylum fraxineum.</i>

The fact that the manufacturers gave to many of these resinoids names identical with those which had been accepted generally as denoting the *alkaloids* of the respective plants, led to innumerable misunderstandings and annoyances.

Thus *Aconitin*, *Atropin*, *Digitalin*, *Hyosciamin*, etc., are identical in name with the well known alkaloids, and when it is considered that there is a great difference in the action and dose between these preparations, the objections to the continuing of the use of both are patent. Of late this difficulty was sought to be overcome by changing the ending of the names of alkaloids to *ia* as in *Aconitia*, *Atropia*, *Digitalia*, etc., but the difference is so small that only the absolute discontinuance of the eclectic preparations mentioned will prevent what may, under certain circumstances, prove to be serious mistakes.

PLUMMER.

Synonym, Pilulæ Antimonii Compositæ.

Common Names, Plummers Pills. Compound Pills of Antimony.

This preparation first came into use in the central part of New York State, for protracted nervous and sick headaches. Thence it spread and it is now in general request.

Preparation of Plummers Pills.—Take of sulphurated antimony, mild chloride of mercury, each twelve grains; guaiac in fine powder, molasses, each twenty-four grains. Form a pilular mass to be divided into twenty-four pills.

Preparation for Homœopathic Use.—Omit the molasses from above prescription and triturate one part of the mixture with nine parts of sugar of milk as directed under Class VII.

KOUMYS.

Synonyms, Kimis. Koumiss. Koumys. Kumiss. Kumys. Kumyss.

Common Name, Fermented Mare's Milk.

Preparation of Koumys.—Koumys is fermented mare's milk, which is extensively employed as a beverage and for medicinal purposes by the Kirghis, Kalmucks, Turkomans, Nogays, and other nomad tribes of the Russian Empire. The process for preparing it differs somewhat with the different tribes, but in all cases consists in inducing fermentation by the addition of yeast to fresh mare's milk and in stir-

ring this occasionally; the product obtained in about twelve hours is known as *ssaumal* or *staumgal*; on being kept for several days it becomes much stronger, of a more decided acid taste, and very sparkling from the confined carbonic acid gas. For the preparation of koumys from cow's milk, the following directions are given by Wilckens (1874): A clean champagne bottle is filled with the fresh milk, one-half to one ounce of sugar is added, and of compressed yeast about the size of two peas; the bottle is well corked, the cork tied securely, and the milk kept in a warm room for two days, and frequently shaken during that time; afterwards the bottle is placed in an upright position in the cellar, and after three more days the koumys is fit for use. According to Jagielski (1874), the fermentation once started will continue in corked bottles and at a low temperature, resulting in an increase of alcohol, carbonic acid, and lactic acid. Cow's milk is preferable for the preparation of koumys, this being free from disagreeable odor and taste. For special purposes, the milk is somewhat diluted before fermentation, or the whey only used in making koumys.

CERATES AND OINTMENTS.

These may be prepared in various ways, as will be seen by the following formulas:

Spermaceti Ointment.

Take of Spermaceti,	5 parts.
White Wax,	2 "
Almond Oil,	16 "

Melt by a gentle heat, remove the mixture, and stir constantly until cool.

Simple Cerate.

Should a firmer cerate be required, the following will be preferable:

Take of Spermaceti,	3 parts.
White Wax,	6 "
Olive Oil,	14 "

Melt the spermaceti and wax, add the oil, and stir until cool.

Another simple cerate is prepared by taking:

Petrolina or Vaseline,	16 parts.
Paraffin,	3 "

Melt, remove the mixture, and stir constantly until cool.

Instead of Petrolina, Cosmoline may be used.

Of late a new solid preparation of Petroleum has been introduced, the melting point of which is 115° F., while Petrolina or Vaseline melts at 95° F. This can be used without any admixture. The Petroleum preparations have this great advantage over all other compositions, that they never become rancid, but seem to keep unchanged for any length of time.

With either of above cerates any given tincture intended for ex-

ternal use may be incorporated in the proportion of one part of the tincture to twenty parts of the cerate, with the exception of *Cantharis* and *Rhus tox.* which should not be made stronger than one part of the tincture to forty of the cerate.

The *modus operandi* is as follows:

Melt a given quantity of the cerate in the water-bath, in a porcelain dish, add the requisite amount of tincture by degrees, and continue the heat until all the fluid has evaporated.

Graphites Cerate is prepared by carefully rubbing together in a mortar one part of pure graphites in the finest powder with twenty parts of cerate.

ARNICA OIL.

Preparation.—Take of recently gathered arnica root in coarse powder, one part, and of the finest olive oil, ten parts, put into a well-stoppered, wide-mouthed bottle and macerate in a warm place for two weeks, then express and filter.

This most excellent preparation is worthy of more extended use, its healing properties are marvelous; it can be used with most beneficial effect on raw and cut surfaces, where arnica tincture, even highly diluted, cannot be borne.

GLYCERINUM AMYLI.

A very suitable form of ointment has for its basis GLYCERINE OF STARCH, prepared as follows:

Take of Starch,	1 ounce.
Glycerine,	8 fluid ounces.

Rub them together until they are intimately mixed, then transfer the mixture to a porcelain dish, and apply a heat gradually raised to 240°, stirring it constantly until the starch particles are completely broken and a translucent jelly is formed.

In medicating, the same proportions may be taken as with the ointments.

GLYCEROLES.

These consist of the medicine mixed with glycerine, and the proportions usually employed are the same as in the case of ointments. They form very convenient preparations, and, being soluble in all proportions in water and alcohol, can be diluted to form both liniments, lotions and injections.

LOTIONS.

Lotions are prepared in the following ways:

1. By simply diluting the medicine with distilled water in the proportion of 1 in 10 or 1 in 100; in the latter case 1½ fluid drachms to the pint is pretty nearly correct.

2. By diluting a glycerole of the medicine with 4 or 9 times its measure of distilled water.

TINCTURE TRITURATIONS.

These preparations are vegetable remedies in the form of triturations. One ounce of a given mother tincture prepared from the fresh plant is triturated with ten ounces of sugar of milk for one full hour, when volatilization is complete, and a perfectly dry and stable powder is the result, the characteristic odor and medicinal property of the mother tincture used being retained. From this 1x trituration, the 2x is made by taking one ounce and triturating it as usual one hour with nine ounces of sugar of milk, and from this 2x trituration the 3x is made by a similar process.

This form of preparation has been found very convenient for dispensing low potencies of vegetable medicines.

TABLET TRITURATES.

These are made of any trituration (with but a few exceptions); they are round, flat, one-quarter of an inch in diameter by one-eighth of an inch thick, and average two grains in weight. They are very convenient for dispensing, as each tablet constitutes a dose. These tablets, from their ready solubility or diffusibility, are destined to come into general use. Their advantages can be appreciated at once when they are allowed to dissolve in the mouth or in a teaspoonful of water, in which way they are readily administered.

TABLE OF WEIGHTS AND MEASURES.

Apothecaries' Weight, U. S.

One pound,	℔	= 12 Troy ounces	= 5,760 grs.	= 13 ounces	avoird.	72.5 grs.
One Troy ounce,	℥	= 8 drachms	= 480 "	= 1 ounce	"	42.5 "
One drachm,	ʒ	= 3 scruples	= 60 "			
One scruple,	ʒ	=	20 "			
One grain,	gr.	=	1 grain.			

			Cubic inches.	Troy grains.
1 minim,	℥		0.00376	0.95
60 "	=	1 fl. dr., f℥	0.2256	56.96
480 "	=	8 " = 1 fl. oz., f℥	1.8047	455.69
7680 "	=	128 " = 16 " = 1 pint, O	28.875	7291.11
61440 "	=	1024 fl. drs. = 128 fl. ozs. = 8 pts. = 1 gal.	231.	58328.88

Avoirdupois Weight, Br.

One pound,	℔	= 16 ounces	= 7000 Troy grains	= ℔ i ʒij ʒiv gr. xl.
One ounce,	oz.	=	437.5	= 3vij gr. xvijss.
One grain,	gr.	=	1 grain.	

The pound and ounce of the British Pharmacopœia are identical with the same denominations of *avoirdupois weight*. The avoirdupois ounce is subdivided into 16 drachms (1 drachm = 27.34 Troy grains); but the British Pharmacopœia recognizes no subdivisions between the ounce and grain. It is, however, optional with the physician in *prescribing* to use the symbols ʒ and ʒ, the former representing 20 and the latter 60 grains, if such should be found to conduce to accuracy or convenience.

			Troy grains.	Avoirdupois.
1 minim,	min.		0.91	
60 minims	=	1 fl. dr., fl. dr.	54.7	
480 "	=	8 fl. drs. = 1 fl. oz., fl. oz.	437.5	= 1 ounce.
9600 "	=	160 " = 20 fl. ozs. = 1 pint, O	8750.	= 1.25 pound.
76800 "	=	1280 " = 160 " = 8 pints = 70000.		= 10 pounds.

French Metric Weights and Measures.

1 milligram	=	0.001 gram.
10 milligrams	=	1 centigram = 0.010 gram.
100 "	=	10 centigrams = 1 decigram = 0.100 gram.
1000 "	=	100 " = 10 decigrams = 1.000 "

1 gram (weight of 1 cubic centimeter of water at 4° C.).	
10 grams	= 1 dekagram.
100 "	= 10 dekagrams = 1 hektogram.
1000 "	= 100 " = 10 hektograms = 1 kilogram.

1 milliliter (or 1 cubic centimeter)	=	0.001 liter.
10 milliliters	=	1 centiliter = 0.010 liter.
100 "	=	10 centiliters = 1 deciliter = 0.100 liter.
1000 "	=	100 " = 10 deciliters = 1.000 liter.

1 liter (or 1 cubic decimeter).				
10 liters	=	1 dekaliter.		
100 "	=	10 dekaliters	=	1 hektoliter.
1000 "	=	100 "	=	10 hektoliters = 1 kiloliter.

The unit of all metric measures is the *meter* (French, *mètre*), and this is the ten-millionth part of the quadrant, or fourth part of the terrestrial meridian, the quadrant being the distance from the equator to the pole. The cube of the tenth part of a meter, denominated *liter* (Fr. *litre*), was adopted as the unit of measures of capacity. The weight of the one-thousandth part of a liter of distilled water at its greatest density (4° C.) was denominated *gram* (Fr. *gramme*), and adopted as the unit of weight. The subdivisions of all measures are named by prefixing to the name of the unit the Latin numerals *deci* (.1), *centi* (.01), and *milli* (.001); and the larger denominations by prefixing the Greek numerals *deka* (10), *hekto* (100), *kilo* (1000), and *myria* (10000).

Relative Value of Wine or Apothecaries' and Imperial Measures.

Wine measure.	Imperial measure.	Imperial measure.	Wine measure.
Pints. Floz. Fldr. Minims.	Galls. Pints. f3. f5. Minims.		
1 minim	1.04	1 minim	0.96
1 fluidrachm	2.5	1 fluidrachm	58
1 fluidounce	1 0 20.	1 fluidounce	41
1 pint	16 5 19.	1 pint	38
1 gallon	6 13 2 32.	1 gallon	4

24 fluidounces wine measure = 25 fluidounces imperial measure (difference 1 gr.).

Value of Apothecaries' or Troy Weights in Metric Weights.

Grain, Milligrams.	Grains. Grams.	Apothecaries' w't. Grams.
$\frac{1}{2}$ ℥ = 1.012	i = 0.0648	\mathfrak{z} i = 3.887
$\frac{1}{8}$ ℥ = 1.079	ij = 0.1295	\mathfrak{z} ij = 7.775
$\frac{1}{4}$ ℥ = 1.295	iiij = 0.1943	\mathfrak{z} iiij = 11.663
$\frac{1}{2}$ ℥ = 1.349	iv = 0.2591	\mathfrak{z} iv = 15.550
$\frac{1}{4}$ ℥ = 1.619	v = 0.3239	\mathfrak{z} v = 19.438
$\frac{3}{8}$ ℥ = 1.799	vi = 0.3887	\mathfrak{z} vi = 23.325
$\frac{3}{4}$ ℥ = 2.025	vij = 0.4535	\mathfrak{z} vij = 27.213
$\frac{1}{2}$ ℥ = 2.159	viiij = 0.5183	\mathfrak{z} i = 31.103
$\frac{2}{5}$ ℥ = 2.591	ix = 0.5831	\mathfrak{z} ij = 62.207
$\frac{2}{5}$ ℥ = 2.699	x = 0.6479	\mathfrak{z} iiij = 93.311
$\frac{1}{2}$ ℥ = 3.236	xij = 0.7775	\mathfrak{z} iv = 124.415
$\frac{1}{5}$ ℥ = 4.049	xv = 0.9718	\mathfrak{z} v = 155.519
$\frac{1}{5}$ ℥ = 4.319	xvi = 1.036	\mathfrak{z} vi = 186.623
$\frac{1}{5}$ ℥ = 5.399	xviiij = 1.166	\mathfrak{z} vij = 217.728
$\frac{1}{5}$ ℥ = 6.479	xx = 1.295	\mathfrak{z} viiij = 248.830
$\frac{1}{5}$ ℥ = 8.098	xxiv = 1.555	\mathfrak{z} ix = 279.934
$\frac{1}{5}$ ℥ = 10.798	xxv = 1.619	\mathfrak{z} x = 311.038
$\frac{1}{5}$ ℥ = 12.958	xxx = 1.943	\mathfrak{z} xi = 342.141
$\frac{1}{5}$ ℥ = 16.197	xl = 2.591	\mathfrak{z} xij = 373.245
$\frac{1}{5}$ ℥ = 21.597	l = 3.239	\mathfrak{z} iiij = 746.491
$\frac{1}{5}$ ℥ = 32.395	lx = 3.887	\mathfrak{z} viiij = 1119.736

Table for Converting Apothecaries' Weights and Measures into Gram Weights.

The gram values given below are practical approximations to the correct values. The column for *liquids lighter than water* refers to the officinal spirits and tinctures prepared with stronger alcohol, also to volatile and fixed oils, not exceeding 0.95 in specific gravity. The column for *liquids of specific gravity of water*

refers to medicated waters, to tinctures prepared with diluted alcohol, and to fluid extracts prepared with diluted alcohol and alcohol, all having approximately the specific gravity of water. The column for *liquids heavier than water* refers to glycerin, syrups, honeys, and to fluid extracts prepared with glycerin.

TROY WEIGHT.	GRAMS.	APOTHECARIES' MEASURE.	GRAMS FOR LIQUIDS.		
			Lighter than Water.	Specific gravity of Water.	Heavier than Water.
Grain $\frac{1}{15}$	.004	Minim 1	.055	.60	.08
$\frac{1}{12}$	.005	2	.10	.12	.15
$\frac{1}{10}$	.006	3	.16	.18	.24
$\frac{1}{8}$	.008	4	.22	.24	.32
$\frac{1}{6}$	.010	5	.28	.3	.40
$\frac{1}{5}$	.016	6	.32	.36	.48
$\frac{1}{4}$	.02	7	.38	.42	.55
$\frac{1}{3}$	.03	8	.45	.5	.65
$\frac{1}{2}$	.05	9	.50	.55	.73
1	.07	10	.55	.6	.80
2	.13	12	.65	.72	.96
3	.20	14	.76	.85	1.12
4	.26	15	.80	.9	1.20
5	.32	16	.90	1.0	1.32
6	.39	20	1.12	1.25	1.60
7	.45	25	1.40	1.55	2.00
8	.52	30	1.70	1.90	2.50
9	.59	35	2.00	2.20	2.90
10 (℥ss)	.65	40	2.25	2.50	3.30
12	.78	48	2.70	3.0	4.00
14	.90	50	2.80	3.12	4.15
15	1.00	60 (℥i)	3.40	3.75	5.00
16	1.05	65	3.60	4.0	5.30
18	1.18	72	4.05	4.5	6.00
20 (℥i)	1.3	80	4.50	5.0	6.65
24	1.5	90 (℥iiss)	5.10	5.6	7.50
30 (℥ss)	1.95	96	5.40	6.0	8.00
32	2.1	100	5.60	6.25	8.30
36	2.3	120 (℥ii)	6.75	7.5	10.00
40 (℥ii)	2.6	150 (℥iiss)	8.50	9.5	12.50
45	3.0	160	9.00	10.0	13.30
50 (℥iiss)	3.2	180 (℥iii)	10.10	11.25	15.00
60 (℥i)	3.9	210 (℥iiiss)	11.80	13.0	17.50
70	4.55	240 (℥iv)	13.50	15.0	20.00
80 (℥iv)	5.2	℥v	16.90	18.75	25.00
90 (℥iiss)	5.9	℥vss	18.60	20.75	27.50
100 (℥v)	6.5	℥vi	20.25	22.5	30.00
110 (℥vss)	7.1	℥vii	23.60	26.25	35.00
120 (℥ii)	7.80	℥viii (℥i)	27.00	30.0	40.00
150 (℥iiss)	9.75	℥ix	30.40	33.75	45.00
180 (℥iii)	11.65	℥x	33.75	37.5	50.00
240 (℥ss)	15.5	℥xii (℥iiss)	40.50	45.0	60.00
300 (℥v)	19.4	℥xiv	47.25	52.5	70.00
360 (℥vi)	23.3	℥ii	54.00	60.0	80.00
420 (℥vii)	27.2	℥iiss	67.50	75.0	100.00
480 (℥i)	31.1	℥iii	81.00	90.0	120.00
℥ii	62.2	℥iiiss	94.50	105.0	140.00
℥iv	124.4	℥iv	108.00	120.0	160.00

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CORRIGENDA. ---

- Page 5, line 37, for fusil read fusel.
- " 6, " 8, " fusil read fusel.
- " 9, " 11, " 11-18 read 12-19.
- " 9, " 24, " 11-18 read 12-19.
- " 36, " 19, " Hydrochloridum read Hydrochloricum.
- " 56, " 29, " Alœ read Aloe.
- " 89, " 32, and wherever else occurring, for *Micheaux* read *Michaux*.
- " 126, " 35, for Agaracus read Agaricus.
- " 140, " 9, " *Jaquin* read *Jacquin*.
- " 151, " 28, " Melœo read Meloë.
- " 212, " 1, " Oderata read Odorata.
- " 214, " 26, " Rotundifolio read Rotundifolia.
- " 322, " 20, " Montane read Montana.
- " 322, " 37, " Acetate read Acetatus.
- " 330, " 11, " Nigrum read Nigrum.
- " 339, " 39, " Tunguinensis read Tonquinensis.
- " 365, " 39, " Ligi read Ligni.
- " 377, " 34, " Pinnati read Pinnata.
- " 380, " 26, " Liquidem read Liquidum.
- " 384, " 10, " Virginiam read Virginianum.
- " 427, " 12, " Sepia Succus read Sepiæ Succus.
- " 455, " 29, to Synonyms of Thuya add Thuja.
- " 456, " 30, for Europœa read Europæa.
- " 460, " 2, " Petasitides read Petasites.
- " 467, " 2, " Verionica read Veronica.



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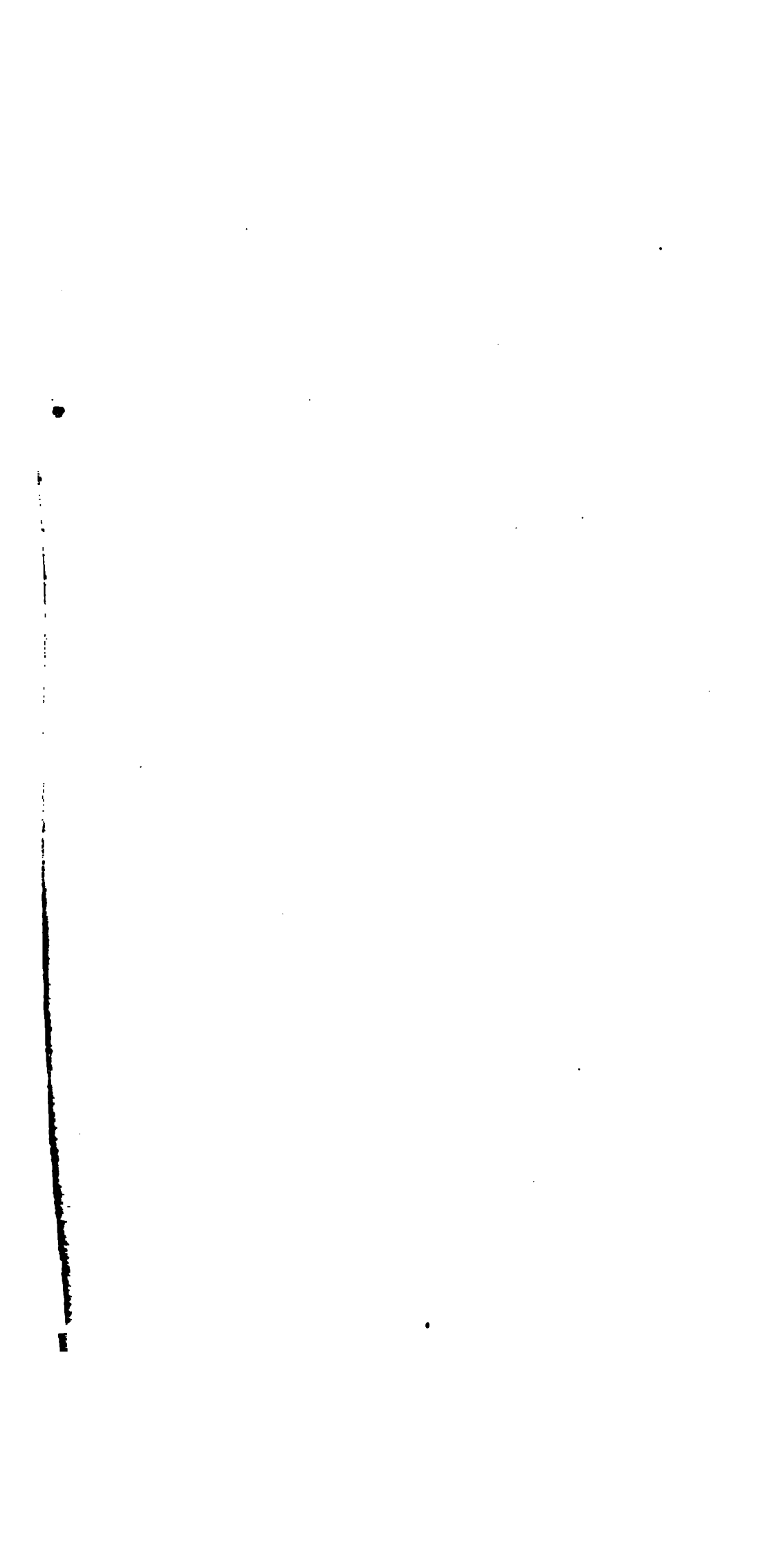
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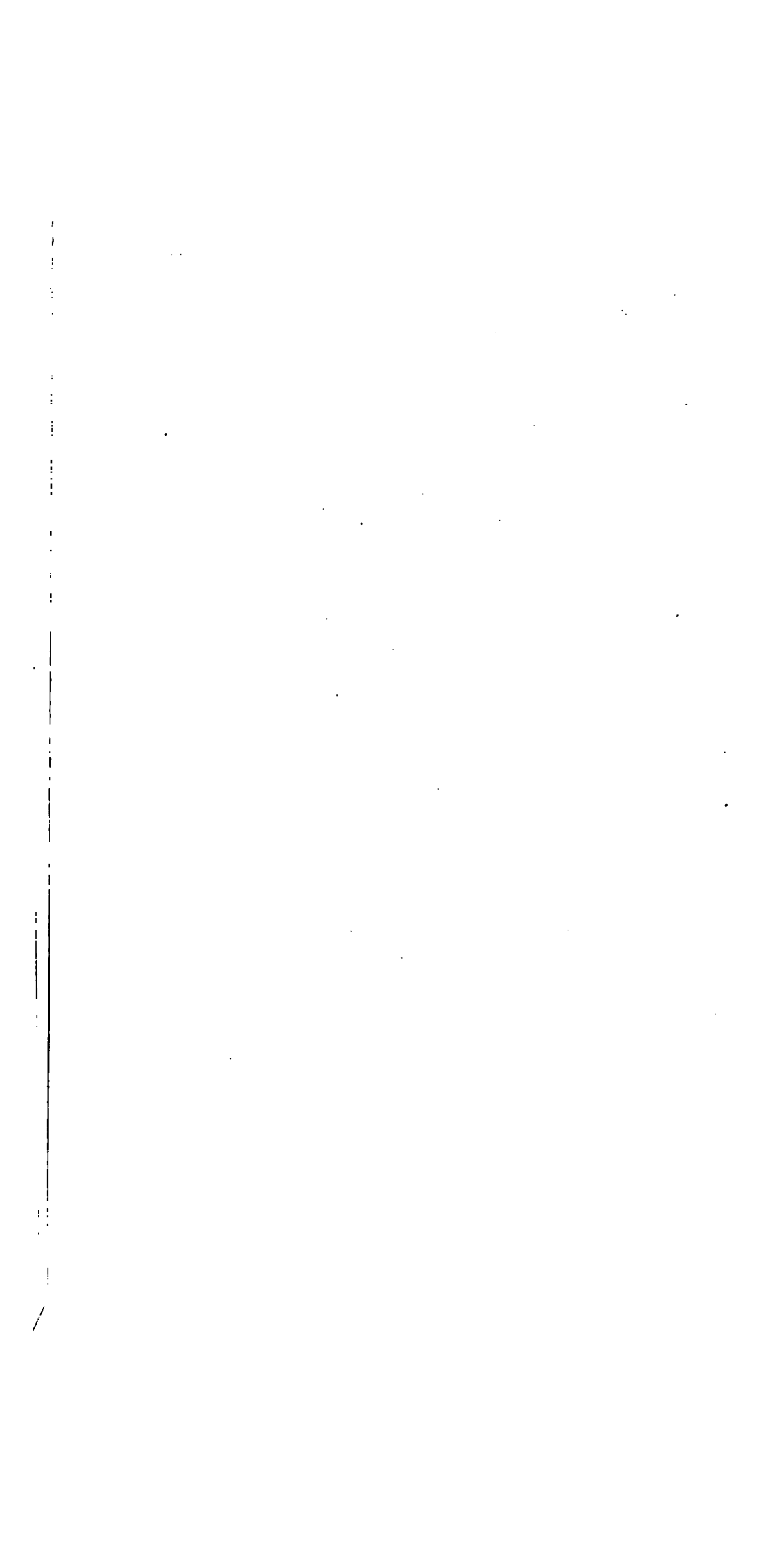
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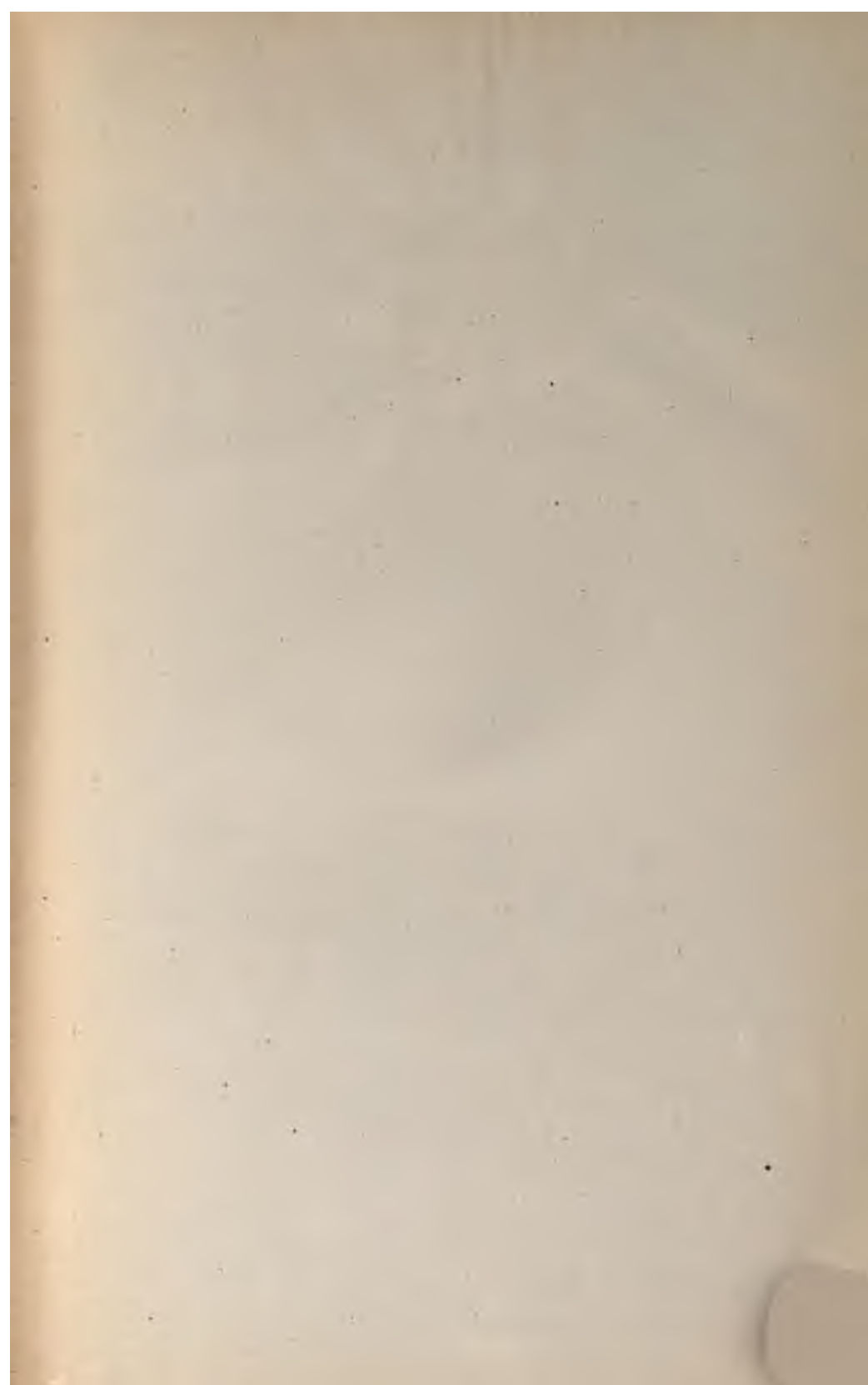
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